

Foundation FORUM

"Aerospace Power: Regional Conflict in the 1990s"

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The Aerospace Education Foundation, the non-profit affiliate of the Air Force Association, was established in 1956 to formulate and administer the Association's educational outreach programs. Supported through tax-deductible contributions (all donations to AEF are used solely for programs and scholarships), the Foundation sponsors scholarships, technical symposia, educator workshops and contests designed to promote aerospace education and help meet the need for scientific and technological expertise. The Aerospace Education Foundation is a tax-exempt 501 (c)(3) corporation. Tax identification #52-6043929.

About AFA and AEF ...

Air Force Association

The Air Force Association (AFA) is an independent veterans' organization whose objective is to promote greater understanding of aerospace and national defense issues. Among the ways AFA disseminates information are publication of *AIR FORCE Magazine*, sponsorship of a series of national symposia, and through educational outreach programs of its affiliate, the Aerospace Education Foundation. AFA is a grassroots organization. Total membership is nearly 200,000 of whom more than 38,000 are Life Members. There are 328 AFA chapters in the United States and 23 overseas. The Association has 226 Industrial Associates, and its chapters have established ties locally with more than 2,400 businesses in the Community Partner program. The Air Force Association was incorporated in the District of Columbia on February 6, 1946.

The Aerospace Education Foundation

On May 1, 1956, the Air Force Association established the Aerospace Education Foundation (AEF). The Foundation was established as a nonprofit organization in order to formulate and administer AFA's educational outreach programs. AEF is supported through tax-deductible contributions. Over the past thirty-six years, the Foundation has made progress in educating AFA's members and the public about the critical role aerospace development plays in the modern world. By doing so, the Foundation promotes a greater understanding of technological advancements and aerospace education. AEF's scholarship programs also encourage higher education in the technological career fields. The Foundation sponsors symposia, roundtables, workshops, contests, and many other programs in order to highlight the full range of educational interest of AFA and to help meet the growing need for scientific and technological expertise.

Mr. James M. McCoy

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"Welcome to Tenth Aerospace Power Symposium"

Thank you very much, Monroe. We are delighted to see such a great turn out. We have a superb symposium planned for you over these next two days. You will have the chance to meet many senior Air Force leaders and explore with them some of the extraordinary challenges we face. I want to thank each and every one of you for taking the time out of your busy schedules to join with us.

A few months ago the Pentagon issued a new strategy based on responding to two nearly simultaneous major regional conflicts, or MRCs for short. The Bottom-Up Review also offered a description of how to respond to them that included as prominent features early intervention of long range air power, the delivery of precision weapons in large quantity, C³I to manage the battle, and lift to swing forces from one theater to another. The Review set up four structure and modernization plans to meet requirements defined by the strategy.

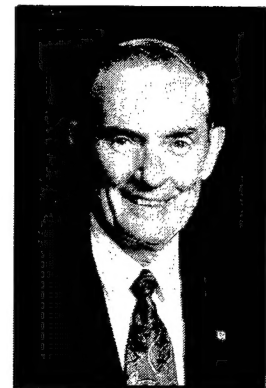
Since the Bottom-Up Review was completed, many questions have been raised. How real are the threats beyond those on which a two MRC strategy is based? Is the force structure sufficient to meet the strategic needs? Are we downsizing too fast? Are we facing a significant short term short fall between capability and strategic requirements? Is the modernization program sufficient to meet the strategic need? Is the Air Force budget, which will soon be just half of what it was at its peak in 1985, sufficient to fund the force structure, the required day-to-day readiness, training

and the modernization program now planned? How are the threats changing and are the modernization programs responsive to those future threats?

The Department of Defense and the United States Air Force will be addressing all of these questions in the months ahead. However, there are two aspects of the strategy we all can agree on. First, the emphasis on regional conflict is justified by continued instability and violence in areas important to United States' interests as well as the absence of any dominant global threat for the foreseeable future. Secondly, air power is certain to remain as a central feature of the U.S.'s response to regional conflicts. We have focused this symposium to reflect these two enduring strategic facts of life.

Today and tomorrow we have brought together a group of speakers who are superbly qualified to talk about the role aerospace forces will play in future regional conflicts and to respond to some of the more general concerns about strategy, aerospace power, and how we are going to equip and train those forces. I am sure these sessions will be interesting and stimulating.

We want very much to address the concerns that matter most to you. If our efforts shed some light on the tough issues facing us and give us some insight into the needs of the future and how to meet them, I will count this gathering as a great success. Thank you again for spending these two days with us. (Applause.)



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Investment Strategies for Airpower's Future: Balancing Technology and Affordability

Thank you Monroe [General Monroe W. Hatch, Jr., USAF (ret), AFA Executive Director]. It's good to be here. I have a lot of information and material to cover, so I'll dispense with the customary humorous story. When we gathered here last year I talked about four things: The emerging role of this new command, Air Combat Command, as a force provider to the Unified, Joint Command structure; secondly, the equipment needs and preferred solution to allow ACC to perform its new roles and function; thirdly, the right size force for Air Combat Command -- the force structure equation; and fourth, how we were putting it all together to position Air Combat Command as a major force and a major player in our nation's military and defense structure.

Since then we have had a busy year and several key actions have taken place. First, the Bottom-Up Review cycle began and finished, as [AFA President] Jim McCoy explained, establishing our future strategy, budgets, and force structure. Second, the future years defense budget has been established through 1999, and the budget for 1995 has been established at \$263.7 billion. Over the five-year span, this budget actually decreases by some three to four percent per year in real terms, driving a significant change still in buying power for defense.

Third, in line with the Bottom-Up Review, the force structure has been set for the Air Force. There are a few key parameters I want to draw your attention to with regard to force structure. We will have 20 Fighter Wing Equivalents, 13 in the active duty Air Force and seven in our reserve components. We may have up to 184 bombers to guarantee us 100 deployable bombers. And there are some smaller cuts in our other aircraft, our C-

130s and our EF-111s, and our ABCCC [airborne battle-field command and control center] aircraft.

"The biggest challenge that future force will face is fighting two major regional conflicts nearly simultaneously. We must decide the right mix of size and quality today to ensure that we can do this."

Fourth, a new strategy emerged. Although peacekeeping and peace enforcing and relief operations are mentioned prominently, it is the requirement to be able to conduct and win two major regional conflicts (MRCs) that is driving our force structure and its size. This most stressing scenario determines the size and quality of our force. Our business is to fight and win our nation's wars. That makes our first order of business to devise a way to win the two major regional conflicts. Peacekeeping and relief operations do not establish the requirements for our force structure. If we can maintain the force structure to win two MRCs quickly, decisively and with few casualties, we will have the force structure to deal with these other missions.

Finally, the administration and Congress passed a Deficit Reduction Act that will continue to put pressure on the defense budget as they seek to balance entitlement growth, health care reform, and continued deficit reduction.

In light of these five actions since I spoke to you last year, I have formulated four new themes that I believe we must address to ensure our Air Force continues to meet our nation's needs.



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First, we need to reduce the support structure and the portion of our budget devoted to support operations and maintenance in order to provide funds for continued research, development, and acquisition, our investment in maintenance funds for our fighting forces.

Second, we need to determine how we are going to size our forces to win in a two nearly simultaneous major regional conflict strategy. We need to reconcile what this strategy dictates in terms of the size and quality of the combat air forces, and the values implied by particular systems and the capabilities they offer.

Third, given the parameters established by the Bottom-Up Review, the budget situation, and this new strategy, what are our equipment needs to ensure technological leadership and high quality forces for the future. This extends beyond the Five-Year Defense Program we have established now. Our responsibility is to lay a strong foundation for the combat air forces well into the next century. This must include both the process for choosing technologies and applications we will pursue and the specific R,D&A programs that will lead to better combat capability.

Finally, I want to close by highlighting a few of the key technologies that we are relying on from you to ensure the combat air forces leadership in the combat power equation.

Let's take a look at the components of our Air Force Budget. Consider that in 1986 when we began to decrease defense spending, we split our expenditure roughly 50-50 between modernization and support. Last week, we sent a budget to Capital Hill that split our funds, modernization 36 percent and operations and support 64 percent. In actual dollars in 1986, when we started the budget downturn, we spent \$41 billion on each side of the house in that 50-50 split. Today we will spend something like \$22 billion on modernization and \$40 billion on operations and support. So actually, we are spending half as much on modernization before you start to take inflation into account. And looking at the \$40 billion in operations and support, it's the same as it was in 1986 -- about \$40 billion. But since then, our force structure has been cut by 40 percent. So the dominant part of our O&S

budget is on the indirect, support side, not the direct, war-fighting side.

The challenge we face is finding a way to reverse this trend and to restore growth in our investment budget. It is clear that we are not going to be able to enlarge our budget. We can, however, adjust the proportion of money devoted to these areas within the budget. We can reduce our overhead, our indirect support costs, to fund the growth in investment we need to have a viable force in the future.

"Clearly we cannot deal with the two MRC strategy with the F-15 alone. We will need all the F-22s we have programmed now and they will need to be augmented by F-16s equipped with AMRAAM."

The biggest challenge that future force will face is fighting two major regional conflicts nearly simultaneously. We must decide the right mix of size and quality today to ensure that we can do this. We must continue to analyze the variable in this situation so that we can be specific about the size of the MRCs, the possible locations, the timing, what is meant by "nearly simultaneous," and all of the factors that determine what tasks our forces must perform.

Then we must match these to the standard our forces will be measured by. The Defense Guidance specifically tells us to win quickly, decisively, with overwhelming advantage and few casualties. My early analysis has shown there are several factors that impinge on our ability to do that. Some are capabilities that are critical to our performance; other are force structure issues. So let me address six of them that impact our ability to win these two MRCs.

The first is our ability to retain sufficient air superiority capability to maintain control of the skies in two nearly simultaneous conflicts. Air superiority guarantees the freedom of movement of all our forces. I cannot imagine a situation where we would commit American surface forces to a fight without first ensuring we controlled the skies. No administration, no commander has had to deal with

that situation since the Korean War, so sometimes we forget its importance.

My analysis indicates the F-22 is even more valuable in light of this strategy. With only four wings now allocated to air superiority, this two MRC strategy will stress even the F-22. Clearly we cannot deal with the two MRC strategy with the F-15 alone. We will need all the F-22s we have programmed now and they will need to be augmented by F-16s equipped with AMRAAM [advanced medium range air-to-air missile].

The second pivotal factor we must address is our capacity for delivering precision weapons from our fighters and bombers. Our bombers' high payload and long range give us a significant advantage here. The upgrades to the B-1 and the B-52H and the delivery of our B-2s with this precision capability are crucial to the two MRC strategy. Many people have under-valued the bomber in this two MRC strategy.

With a largely home-based force, we need the range and the immediacy that our bomber force readily provides. This is the force element that has the greatest capacity for flexibility. But the bomber force too has its limits. If we send 100 bombers to one MRC, my analysis shows we will need to swing at least 50 of those bombers quickly to another theater if a second MRC erupts.

That brings me to the first factor we must deal with, the distribution and quantity of our precision weapons. We know precision weapons are important, but are we buying enough? We need to make sure that the JDAM [joint direct-attack munitions] program is progressing as we want it to, to meet the schedules we have set. JDAM is critical to wringing maximum capability from our bomber force. We must also continue to support the cruise missile component of precision weapons. The TSSAM (Tri-service standoff attack munition), our conventional air launched cruise missile, and HAVE NAP [AGM-142, TV guided stand-off missile], and we must continue to produce and deliver the sensor fuzed weapon for both our bomber and fighter units.

"With a largely home-based force, we need the range and the immediacy that our bomber force readily provides. This is the force element that has the greatest capacity for flexibility. All of these weapons must be deployed in quantity and at the right locations."

My analysis shows we need to pre-position them carefully if we expect our theater commanders to be able to take full advantage of airpower in a major regional conflict.

The fourth factor involves whether we will have enough bombers to deploy 100 to a major regional conflict as I mentioned earlier, and fly them at higher sortie rates than in peacetime, and still maintain an adequate number on a possible nuclear alert. Our requirement is to deploy 100 bombers to a major regional conflict and fly at wartime sortie rates. But, like all of our other aircraft, bombers go into phase and depot maintenance periodically. Like all of our other aircraft, we maintain a few in test configurations, and we use some for training to ensure we have enough crews qualified to fly. And we may also need to put some on nuclear alert here at home -- which adds to the numbers we need. So we will need considerably more than 100 in order to deploy 100, and the Bottom-Up Review recognizes that by stating a need up to 184.

The fifth factor, and one that has been largely ignored, is the need to mobilize the Guard and Reserve immediately at the outset of any MRC. Today our reserve components fly a significant portion of our fighters and soon many of our bombers. They are integral to our operations and we need for them to join us right from the start. We must create the mechanisms to ensure that occurs smoothly and full mobilization takes place as quickly as possible.

The final factor we must address is lift, both air and sea. Although this is not a large part of Air Combat Command, it is vital to our operations and to every other combat organization in every service. Our home-based force presupposes lift, and therefore, each of

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us must advocate the systems we rely on. This includes a large number of C-17s and Fast Sealift.

These are six factors that must be addressed in formulating the two major regional conflict strategy and in determining the force structure we maintain to support it. But there is another issues that we must address that will carry us beyond the tangible bounds of two MRCs. For both the short and long terms, we must reconcile our equipment needs with the greater need of preserving our technological leadership and the ability to field high quality forces for the future. We will have smaller forces, so we must leverage technology and we must ensure it is affordable.

"With its combination of stealth, speed and sustainability, the F-22 puts our forces a generational leap ahead of the competition."

We are striving to create a new way of doing business that will lead us to the right balance between technology and affordability. We have taken the first step. We have incorporated a strategy-to-task framework into our planning cycle that forces us to think about what our theater operations look like today, what our operational objectives are, and what specific tasks will meet them. Not for the old NATO versus the Warsaw Pact, but for various MRCs in different theaters of operations.

At ACC, instead of looking at our challenges in isolation, we have 11 teams, mission area support teams, looking at each of our missions -- strategic attack, air interdiction, offensive counter air, and so on -- to determine how we can leverage technology to improve the way we accomplish them.

These teams identify our needs and then explore every alternative to meet them, from changing current tactics, to modifications of current equipment, to procurement of new systems, to technology enablement. This puts rigor into our requirements process, forces us to keep our operational goals at the fore, leads, I believe, to balanced decisions, and ensures we push technology for the future.

This is also a wide-open process. Each of

the mission area plans -- MAPS -- developed through this system is available to our partners in industry and 90 or so have already taken advantage of this opportunity. They've told us that these MAPs have helped them focus their efforts, channeling more energy into projects they know meet our needs and less investment into those that obviously will not by focusing their C-RAD [cooperative research & development agreement] and I-RAD [in-house research & development agreement] programs.

MAPs are doing the same thing in-house. MAPs give the acquisition side of the Air Force a simple way to confirm the operational requirements driving our mission needs statements. They have a simple measuring stick at AFMC to decide which projects are profitable and which are not. They also help eliminate duplicate efforts in our labs and in our test centers by providing a document that justifies lab and test programs.

This system has been in place less than a year, but we can already see its benefits. The annual iterations of our mission plans, our MAPs, are helping us maintain constant communication with industry and improving the overall responsiveness of the entire cycle to our nation's changing security needs. And I appreciate your support in helping us with those mission area plans.

The easiest way to understand the tough choices we face in this austere budget environment is to look at how we plan to leverage our technological superiority in terms of seven of the missions ACC performs and the equipment we need to perform them.

"This system has been in place less than a year, but we can already see its benefits. The annual iterations of our mission plans, our MAPs, are helping us maintain constant communication with industry and improving the overall responsiveness of the entire cycle to our nation's changing security needs."

Think for a moment about the challenge

we face in the air superiority portion of our counter air mission. As I said earlier, we have only four wings now devoted to this vital mission. Make no mistake, air superiority is the sine qua non of the modern battlefield and we have the system that guarantees we can seize and maintain it. With its combination of stealth, speed and sustainability, the F-22 puts our forces a generational leap ahead of the competition. It will give our warfighting commanders the freedom to penetrate radar defenses when and where they want and the superiority in combat that will allow our smaller force to be dominant.

We must stay the course on the F-22, but with such a small number of them we must also look after the needs of our entire air-to-air fighter force. We will need to equip our F-22s, F-16s, and until they are replaced by the F-22, F-15Cs with the AIM-9X and a helmet-mounted cueing system. We need to rectify that situation. We need to put the RFP [request for a contracting proposal on a program] for the AIM-9X on the street immediately. Unfortunately that program will need to make up for the eight to ten years of time we lost in technology leadership in short-range missiles in the now defunct ASRAAM [advanced short range air-to-air missile] program. We need to get the RFP for the AIM-9X out on the street, ASAP as we say.

In addition, we need to continue to upgrade AWACS, the eyes of air battle. With the radar system improvement program we will be able to detect smaller targets and targets at longer ranges. Combined with the Block 30-35 upgrade it will give us a better combination of ESM [electronic surveillance mission] and active radar to identify targets earlier to help avoid fratricide and improve our situational awareness.

We are doing everything we can to leverage our bombers to improve our ability to perform our strategic attack mission. We are fielding 20 B-2s which will give us 16 deployable. The first one is at Whiteman Air Force Base [Mo.] now, and flying very well. There is no reason to believe that the B-2 will not meet our expectations.

Upgrades are bringing us the capability critical to making the B-1 and B-52 more capable. We know we need to improve the B-

1s ECM [electronic countermeasures] and give it a precision weapons capability. We also need to resolve some reliability and maintainability issues on the B-1.

This spring we will begin a six-month test to determine what it will take to achieve the same mission capable rates in our B-1 wings that we maintain for our B-52s. We are happy to perform this test and we hope at the end we will know exactly what the B-1 upgrade will entail for proper logistics support and R&M improvements.

We will also continue to upgrade our remaining B-52s for both conventional and nuclear roles. In the conventional role it will lead the way in attacking high value targets with stand-off weapons. Therefore, we need to maintain a sizable contingent of the HAVE NAP missiles, conventional air launched cruise missiles, and TSSAMs, as well as Harpoons for the B-52's sea denial mission. Once more, the capabilities offered by our bomber force underscore the need to maintain large quantities of the JDAM to give our bombers precision capability at affordable cost.

"I consider the sensor fuzed weapon a critical part of the air interdiction mission. It gives us a very cost-effective means of blunting and countering armor attacks, but again, only if we procure a sufficient quantity of them."

We can use our bombers in air interdiction, but more often this mission falls to our longer range attack aircraft, typically our F-15Es, our F-117s, our F-16s and our F-111s as long as they remain in the inventory. Last year I told you that we would like to have 30 or 50 more F-15Es if we could afford it. That hasn't changed. The demand for this aircraft continues to outstrip the supply. I do not have sufficient attrition reserve or back-up inventory aircraft to meet all of the requirements levied on our F-15Es. It's a very popular system as you can tell from its success in sales to Saudi Arabia and Israel.

We will also continue to upgrade our F-

16s, for two primary reasons. First, we need to make them more capable across the board for our active, Guard, and Reserve units, and second, to assist in selling F-16s to our allies and security partners to ensure they operate the same equipment we do and vice versa.

There are several modifications that would make the F-16 an even more capable aircraft than it is today; an internal FLIR, synthetic-aperture radar, a digital terrain system, and a color moving map system.

We don't intend to upgrade our F-111 force any further but we do need to keep it in the inventory until we have a clear, funded plan to replace it. And we can more than compensate for the contribution of the F-111 through the use of our bombers with precision capability.

I consider the sensor fuzed weapon a critical part of the air interdiction mission. It gives us a very cost-effective means of blunting and countering armor attacks, but again, only if we procure a sufficient quantity of them.

Another mission, close air support, is still a cherished mission of our Air Force and will continue to be. We are actively upgrading both the F-16 and the A-10. In the F-16, improved data modem, SINCARS FM radio [secure voice], and a laser tracking capability in the Block 30 aircraft designated for CAS; and the same data modem, improved night vision goggles, and a compatible cockpit lighting system in the Block 40s.

I just reviewed our night vision goggle program in the A-10 and the lighting compatibility program that goes with it. We will begin flying with the Army with these night vision goggles in July. The critics who claim we've abandoned close air support really don't have a leg to stand on.

We have active upgrade programs in both of our close air support aircraft and we are in the process of setting up our third composite wing, our second to be devoted to supporting ground forces with close air support, at Moody Air Force Base [Ga.].

Both our air interdiction and close air support missions will be performed far more capably in the future with JSTARS. The Joint Surveillance Target Attack Radar System will give ground commanders the ability to see

their future battlefields deep and wide. This ability to survey 150 square kilometers at a glance will revolutionize the way our army fights. They will need to train with JSTARS constantly. Logically we will need four or five JSTARS at every major Joint exercise.

Judging by the operational tempo our AWACS sustain, JSTARS will also play an important role in the situations short of war. It will become one of our most dependable means of projecting presence and supporting our theater CINCs when regional tensions rise. These peacetime requirements will quickly overtax the 20 JSTARS we are programmed to buy. So we need to establish requirements for our JSTARS, the number of our JSTARS, based on the peacetime requirements we know they must fulfill.

The C-130s in the United States are in Air Combat Command now because they are integral to Theater air combat operations, one of our major missions. C-130 crews are performing heroically everyday in Southwest Asia, Bosnia, Somalia, flying in harm's way, doing a myriad of tasks; all part of regional operations.

We need to upgrade the C-130 force and find a way to begin buying the more efficient and improved "J" model. The C-130J will maximize the competence of the combat delivery mission of the great Hercules well into the next century. The C-130J is the ultimate answer for our upgrade in this mission area.

We continue to struggle to meet the demands of our reconnaissance mission. We have a good support for reconnaissance with JSTARS, for example. Even though JSTARS is primarily a targeting system it still provides us with a great deal of reconnaissance and intelligence information. The U-2 is doing very well, but the demands on it are high and continue to increase. We are re-engining it, with a much more capable engine, but we are having a tough time generating support for the advanced sensors we need. Likewise the RC-135 is doing well, but the high demands placed on it dictate that we take prudent steps to extend its life and improve its capability. The current mods we have planned will take us well into the future, but they must not be delayed as they frequently are.

The reorganization of defense intelligence

through DARO (Defense Airborne Reconnaissance Office) is helping us here. This has given us a single point of contact for advocating our reconnaissance needs for theater air operations. In the past, national requirements frequently overshadowed theater air needs for reconnaissance. The DARO office should help us overcome this long-standing attitude.

The one area where we still have a deficit is manned and unmanned theater air reconnaissance. Because of the cancellation of the FOTRS [follow-on tactical reconnaissance system] program, we are slipping further behind here. At the same time, there are some very encouraging developments in electronic combat. We are excited about being able to use direct links to get the direction and precise location of ground based radars from external sources and provide them to the cockpit through wide band data links. Several experiments this past year have shown great promise in this and so we are committing a considerable amount of our time and our resources to refining this and making it into an operational capability. That will take years, however. In the meantime, we are fielding a limited system now in our new F-16 Block 50s and pursuing an improved on-board system for the F-15. HARM [high-speed antiradiation missile] continues to be a winner for us and we will continue to procure HARM.

We are making progress in a new mission that has taken on greater importance and that I have been advocating for the last three years, theater air defense. ACC has a great commitment to theater air defense, particularly the attack operation prior to launch and during the launch phase. Part of the solution to this is putting together a system that allows for boost-ascent phase intercept, and we are working on that at ACC.

We want to attack missile sites and launchers as soon as possible to prevent further firing of TBMs (tactical ballistic missiles). We need a tighter command and control loop so that we can put bombs on targets as soon after launch as possible, preventing further launch. But the ultimate goal is to destroy these missiles before any of them can do any damage. So we are looking at systems, sensors and weapons, for intercept during ascent. Another option for dealing with this threat in the

long term, in my opinion, is the airborne laser (ABL), and we must continue to support a live demonstration of the ABL. Finally, in the command and control loop for theater air defense, we are making greater use of data links. We now have JTIDs on fighters as well as all of our command and control systems, but we need to increase the application of data links across the board to net all the players on the theater air defense team and in the theater air defense loop.

"We must make sure that JAST delivers the products that the Air force of the 21st Century needs. I see JAST as the progenitor of no less than three aircraft and as a catalyst for a new way of doing business."

Finally, our entire technological future is bound up in the emerging JAST Program (Joint Advanced Strike Technology Demonstration Program). We must make sure that JAST delivers the products that the Air Force of the 21st Century needs. I see JAST as the progenitor of no less than three aircraft and as a catalyst for a new way of doing business. JAST is our best chance to meet our Nation's future fighter needs. It could and should produce the replacements for our F-16s in the Air Force and for the Navy's F-18 and A-6, and an export fighter that deletes the sensitive technologies and would beat anything on the market now in terms of quality for price.

To do all of this, JAST needs to get off to a quick start and prove that it can deliver a high-quality product. Its first product, in my opinion, should be an advanced operational flying prototype. I envision this as an aircraft created using about 75 percent existing technologies from the F-22 and other programs, and 25 percent brand new technologies. With this mix, this aircraft could be flying within six to eight years with various suites of avionics, armament, and other systems.

JAST's second but parallel product should reverse that technology ratio. It should use existing technologies for about 25 percent of the systems of the aircraft, the flying proto-

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type, and new technologies for the other three-quarters of the system. This second product would be closer to what we would think of as an advanced technology demonstrator, more of an enabler, than an operational demonstration prototype, and would take longer, maybe 15-20 years to field.

Both of these branches of JAST should be built in accordance with the most advanced ideas on design and manufacturing. They present the perfect opportunity for the aerospace industry to step away from the set patterns of the past and create a truly lean enterprise replete with some dual-use applications that we all have spent the last year or two talking about.

JAST is the linchpin of our efforts to leverage technology in the future, but it must not be our only effort to leverage technology. We must strive to maintain a healthy technology base to ensure the Air Force's leadership and our role in the combat power equation.

So we must continue to invest in:

- ❖ Stealth in all frequency bands.
- ❖ Precision weapons, for both direct attack, because they are more efficient, and stand-off, because they are necessary until we have taken air defenses down.
- ❖ Long range bomber aircraft -- we must find a way to retain our bomber manufacturing capability, and develop a replacement-based strategy for our long-range bombers.
- ❖ Global situational awareness, particularly from space, so that this smaller force will know what is going on, all the time, and where to bunch our muscle.
- ❖ C⁴I (Command, Control, Communications, Computers and Intelligence), particularly those that help us to reduce our cycle time from detection of targets to the attack of those targets. We are getting better and better at that since the Gulf War, but we need to drop our cycle time to 12-24 hours for planning and to within minutes for execution.
- ❖ JSTARS -- improving on both the wide-area, moving-target indicator and synthetic aperture radar of this wide-area sensor.
- ❖ And finally, improvements in reliability and maintainability. This home-based force is required to project power great

distances and do so without forces ready to support us at the other end. That makes improvements in reliability and maintainability absolutely crucial.

I've coverage a lot of ground here, so let me reduce this to a quick summary. The Two MRC situation is our most stressing combat requirement. While we are comfortable with participating in peacekeeping and peace enforcing as we stand today, I will not be happy until we are satisfied that we can handle the Two MRC scenario just as comfortably.

"Today we are at the point where the fat is gone and the muscle has been trimmed. We can not give more in combat capability, and still do our tough job."

We must keep the force structure to win two major regional conflicts and we know that airpower is the key to doing that. Land-based air will provide the bulk of airpower, just as it did in the Gulf War for both combat sorties and support sorties. We must maintain the force structure to accomplish these missions.

Further erosion of the force structure will put us in bad shape. Today we are at the point where the fat is gone and the muscle has been trimmed. We can not give more in combat capability, and still do our tough job.

I don't think all of us realize what it means to be a home-based force, but that is precisely what we are. We still have in-place forces in the Pacific and Europe that you will hear more about this afternoon and tomorrow, but they are smaller now and spread thinner than they used to be. So 90 percent of our combat power is here in the United States. Our job is to project that power across the globe.

Bombers are an extraordinarily valuable weapons system in this equation. Composite wings are also important to our ability to project power and they are ready now. Our wings at Mountain Home [Air Force Base, Idaho] and at Pope [Air Force Base, N.C.] are ready for combat today, along with the one we'll build at Moody [AFB] next, are our

front-line forces of the future.

We must reduce the support structure and the indirect operations and support part of our budget to get the tooth-to-tail ratio back into balance. We can do this by consolidating depots perhaps, and labs perhaps, and reducing some of the training tail.

We must increase our investment budget, the R,D&A portion of our budget, to protect modernization and the industrial base. This is another reason for reducing the support structure. It will free up a larger portion of our fixed budget over the next five to ten years for investment in R,D&A.

"We must strike a new balance between technology and affordability taking care to meet our present needs without closing off our future options."

And finally, we must modernize the combat Air Force that our nation relies on today with the programs that I talked about: the F-22, bomber upgrades, JSTARS, JDAM, the JAST products, AIM-9X, the C⁴I upgrades, F-15E (30-40 more), F-16 upgrades, C-130 upgrades and the C-130J.

As this new world continues to evolve, it is increasingly obvious that the patterns and solutions of the past no longer suffice. We must strike a new balance between technology and affordability taking care to meet our present needs without closing off our future options.

This requires new thinking, new approaches and a renewed spirit of innovation among all of us. It's time to stop talking about the New World and what it means and begin to put shape to the strategy, the budget, and the forces described by the Bottom-Up Review that our air and our space forces need and that will win.

Thank you for your time and I'm happy to take any questions.

Question & Answer Session

Investment Strategies 13
for Airpower's Future:
Balancing Technol-
ogy and Affordability

General John M. Loh

GENERAL HATCH: *Thank you very much, General Loh. You really packed a lot of data into that presentation. General Loh, you discussed a hundred deployable bombers, and we know about the 20 B-2s. Could you clarify the arithmetic on the remaining bombers? We know there are B-1s going to the Guard and could you detail the number of B-52s in that count?*

GENERAL LOH: We are still working on the arithmetic because the strategy requires us to deploy 100 for a conventional capability, and in some situations we will require some for a nuclear reserve. We still have to have some in depot -- quite a few, because we're going through this upgrade program as well as normal depot maintenance. That's why the Bottom-Up Review said "up to 184." We're still trying to work out the calculus on that. Clearly, we want to retain as many bombers as we can. They're expensive to operate, so when it comes to systems that you take down because of budget problems, the bombers rise to the top.

I think it's up to us to continue to tell audiences like you of the value of bombers in this new situation -- where we are based at home and must project power at great distances quickly around the world in conventional scenarios. We must break lock with the thought of bombers as having no use other than for nuclear weapons. We are doing that, and I would like to see us continue to fund up to 184 bombers as stated in the Bottom-Up Review.

GENERAL HATCH: *You mentioned the six month test for the B-1, talking about precision weapon capabilities. We know the ECM needs upgrade, is this a two or three year program to bring these capabilities online?*

GENERAL LOH: Yes. This is in conformance with our bomber roadmap where we laid out an upgrade program for the B-1. We and the Congress both want to make sure exactly what we need in order to achieve a capability equivalent to the B-52, which is a certain mission capable rate. We are achieving less than that now because we're not funded as well for logistics support. So this test will help determine whether or not we can maintain the required mission capable rate and what level of spare parts support and what level of R&M upgrades we need to do that. We will have a much better picture of that, and I'm confident that we'll do well in that test -- in the sense that we will all recognize the value of the B-1 and that it can be maintained at a mission capable rate equivalent to the B-52 and that the support tail to do that will be affordable.

GENERAL HATCH: *We have been reading correspondence from Chairmen Dellums [House Armed Services Committee] about the B-2 and the industrial base and your perspective about that issue. Would you clarify for this audience how you view that issue?*

GENERAL LOH: As I said in my remarks, it is important that we maintain our ability to produce bombers in this country, just like it is important to produce other unique classes of weapons systems. I put bombers in that category, although it has been suggested that if you can produce an F-22, then you should also be able to produce a large bomber. But the similarities are not that clear. We need to continue to find a way to maintain this industrial capacity. After all, at some point in time, our bombers will wear out. Some of the B-52s already have, so we will need to replace them.

Just look at the way we bought bombers in the past versus the way the Navy has bought submarines. We buy them in bunches. It is a tough fight every time because over a short period of time, we take a large part of the nation's defense budget for the acquisition of those bombers. That causes us huge fights [for resources]. I'm just trying to find a better way, a better acquisition strategy, to buy this class of equipment, which is capital intensive and very high cost, like submarines are. We need, therefore, to find a way to do it in a more sensible manner than buying them bunches at a time. I don't have any solutions or answers but I think it is something we all should think about.

GENERAL HATCH: *You mentioned the need for an RFP immediately for the AIM-9X. When would you view that system coming on line?*

GENERAL LOH: I don't have the specifics on that. We've already done a lot of demonstration-validation work on various sensors and types of guidance, so we're quite familiar with the technology. I think it would go through a normal development cycle. However, I don't know what normal is anymore. Having demonstrated the technical capability of the AIM-9X, particularly its large off-boresight capability, and its acquisition capability, and having demonstrated all that, and understanding its cost, I think it can be fielded in a normal maturation process.

We need it because right now there are some missiles out there, flown by potential adversaries, that have a large off-boresight capability. We've been hamstrung because of our commitment in the ASRAAM program over the last eight to ten years, so we've fallen behind in this class of system. We need to regain our technical leadership. The AIM-9X will allow us to do that. We need to do it because there are so many other air forces around the world that have the AIM-9 missile, so we're missing an opportunity for foreign sales so that our allies can be equipped with the same system we have and continue to fly the AIM-9. I'm suggesting that we need to get on with it, and we need to get on with it right

away.

GENERAL HATCH: *This question and others like it address readiness. You talked about the shortfall in the budget. How do you stack up the readiness of your forces today?*

GENERAL LOH: The readiness of our forces today is very good. We have a few isolated problems but we always have a few isolated problems, regardless of the level of funding. Our readiness is fine, but I see some problems creeping in. If a couple of years from now we don't sustain our budget for spares and supportability down stream, we may find some shortfalls. I'm not concerned about readiness today, I'm concerned about readiness lead time for spare parts, which is about two years.

This puts us about the spring or summer of 1996. We need to make sure that some of these systems, where we are beginning to see problems, generate enough budget support for spare levels so that doesn't happen.

GENERAL HATCH: *As part of the U.S. Atlantic Command, you are involved in a lot of Joint training with the Army, Navy and the Marine Corps. How are those Joint training exercises shaping up?*

GENERAL LOH: We are beginning that process right now. I think it is the right way to go. I mentioned that we are largely a home-based force and we want to be able to maximize our combat capability. We can only do that by working jointly with the capabilities of the other services. We have to understand each other's capabilities and limitations. So we are putting together the packages that will train together in the [home] station and then will deploy where required, like to overseas CINCs, to support PACOM, EUCOM and CENTCOM with packages that will meet their needs in normal training exercises, like Team Spirit and exercise in Europe, as well as in periods of crisis. We are just getting into that. It is the right thing to do, but we still have a lot of questions to answer yet.

GENERAL HATCH: *General Loh, thanks so much for being with us today.*

"Space and the War Fighter"

Thank you very much, Monroe, Jim, and Ollie [AFA Chairman of the Board Crawford]. I am sorry I will not be with you tonight. We are going to honor Pete Aldrich [former Secretary of the Air Force] with a space achievement award in Houston. I think we can all be proud of that and share in the joy of his being honored.

I do want to thank you from the bottom of my heart for the support you give the Air Force. Now more than ever the AFA really fills a vital role in the defense of our nation. Certainly the performance of our air and space forces during Desert Storm showed how important they are. As you know, better than I, it is a tough fight in Congress and Washington, and we really depend on organizations like the AFA. So, Monroe, keep it going.

Desert Storm in some ways was an historic war. In the future we will look back and find that it was a landmark that really ushered in a new era of warfare. Obviously, we think about the role that air power played because it was central to the victory. We look at things like decentralized operations, the impact of the media, the importance of low casualties, and use a new buzz word -- information warfare. I do not think people really realize the demand that modern warfare plays or puts on information.

If you just think about it, with the laser guided weapons we use, we need to know not only where the scuds are hidden, but also which is the load-bearing wall in that building. In terms of time, the longest time constraint we had during Desert Storm was three minutes and that was the maximum, and that had to do with retargeting the B-52s. So, the need for timely information is just astronomic in modern war. I think that is where Space Command comes in because space is infor-

mation warfare.

We have had an identity problem in the military space community. We did not look upon ourselves as warriors and, in fact, we were kind of intimidated by the flying air force. I have accused us of doing our war dance in our own tepee. We did not want to let anyone know what we did or why we existed. As a result, we are having a cultural change in Colorado Springs.



"Desert Storm in some ways was an historic war. In the future we will look back and find that it was a landmark that really ushered in a new era of warfare. I do not think people really realize the demand that modern warfare plays or puts on information."

We have some other problems. One of our problems is our strong tie to the Cold War. Space Command was primarily designed to support strategic warfare. Look at programs like the Defense Support Program which is designed to see long range ICBM launches. We were fortunate during Desert Storm that we could use it for theater ballistic missiles, but it has capabilities and limitations that need to be addressed so that we can fight across the full spectrum of war in the '90s.

I think the Milstar communications satellite is another example. The system is ideally designed for the Cold War. That war may well be over and we need to take a look, as we

currently are, on how we can make the system more responsible for theater warfare.

"I am going to tell you something. Without intelligence, operations is blind. Everything in warfare starts and ends with intelligence. On the other hand, without operations intelligence is irrelevant. We do not need intelligence if you do not pull a trigger as a result of knowing information."

Another aspect of the space identity problem is what I call a research and development mentality. I have no problem with that mindset, but most of the people in Space Command have served tours in the acquisition business. Quite frankly, Space was acquisition. The people that brought us to where we are in Space are giants -- the Bernie Schriever [General Bernard A. Schriever] -- but nonetheless it is time to move on.

I can best give you an example of the problems we face when you look at space lift -- getting to space. The lift people looked upon the payload people as the customer and our operations were always in an internal conflict between the customer and the lift people. I think that is a wrong view.

The customer of Space is not the satellite manufacturer, the satellite producer. The customer of Space is the soldier in the fox-hole, the sailor on the bridge of a ship, or the pilot in the cockpit. We need to get Space to come together as a team that satisfies the needs of the customer. We need to really work at how we do our business. I will talk a little more about that with regard to some of the problems we have in lift.

A big part of Space is gathering intelligence. As Mike [General Loh] pointed out, we need to continue to work the intelligence side. Quite frankly, we need to instill a warrior mentality in much of our intelligence

community.

In the past, the space intelligence community tended to serve the national user focused on policy or science and technology. It was non-military, and as a result it tended to service itself. It became its own customer. Then wartime comes along and the systems we have airborne are not adequate to meet our needs. The need for broad area synoptic coverage was a big lesson from Desert Storm.

Our distribution systems to the soldier, sailor, marine and airman are fragile or underdeveloped. Our Ops and Intel team is largely untrained. We did not know how to do collection management during Desert Storm. Learning how to do it in wartime is the wrong time.

We had no way of directly tasking sensors, of cross-cuing electronic sensors and imaging sensors, things that should be fundamental to fighting war. And of course, we had separate cultures and we had walls dividing us in those cultures between Ops and Intel -- classification walls, turf walls, organizational walls, many useless relics of times past.

I am going to tell you something. Without intelligence, operations is blind. Everything in warfare starts and ends with intelligence. On the other hand, without operations intelligence is irrelevant. We do not need intelligence if you do not pull a trigger as a result of knowing information.

So, one of the things we certainly need to do, and particularly with intelligence derived from space assets, is we need a shotgun wedding. We need a forced marriage. We need organizational and procedural changes. We need to train together in peacetime day in and day out. We need to have Ops support for intelligence programs in terms of getting them through the tough budget battles in Washington.

"The need for broad area synoptic coverage was a big lesson from Desert Storm."

We have a basic problem in lift. It is widely recognized and widely understood but

the solution is the hard part. As they say, the devil is in the details. If getting information from space is important but you cannot get to space, then you have a real problem.

We usually talk about strategic lift problems concerning the need for the C-17. During Desert Storm, I guarantee you we talked about sealift problems. But the problem the unified commands face in strategic lift today is space lift; the inability to get the systems airborne in a timely, cost-efficient manner. I think that if you look at it, the first thing you look at is responsiveness.

Our space lift is not responsive. We have a vital intelligence program that has been sitting on the pad. It is now a thousand days late for takeoff.

Last year we had a problem with one of our satellites and we had a replacement satellite available. In fact, we had more than one available, so I turned to the staff and I said, "launch the spare." I figured it would take about 60 days to get airborne. We will go 600 days before it is airborne, and that is still just a promise.

The excuse you get is this, "Well, you want to get it airborne, but you must get airborne safely, and therefore, it does not matter when it gets airborne." Again, it is that cultural shift about payload and lift. They are not working as a team. My point is this -- the wrong customer is payload, the right customer is the war fighter. If you do not get something airborne for them, do not bother because they need it when they need it.

I equate it to the airlines. When you go to the airlines and they say, "Look, if you want to get airborne safely just wait around and next Wednesday we will take off." That is not going to hack it, you have to make your schedule. I think we really need to work on our discipline within space launch and make sure we are responsive to the needs. That is going to require planning. It is going to require standardization. It does not require shortcuts on the launch pad. It requires repeatable processes. It requires standardized systems. It requires putting authority, decentralized authority, where lift decisions are made. This is at Patrick [AFB, Fla.] and Vandenberg [AFB, Calif.] and not Colorado Springs and Los Angeles where many of deci-

sions are made today.

The other part of space lift that is a real problem is cost. I do not think there is any doubt that the cost of space operations is denying war fighters an opportunity to have systems airborne that they need to fight wars more efficiently with lower loss of life.

To fix the cost problem we need to do things we have not done in the past. We need to exploit ideas like smaller satellites. Maybe they will not do a full range of intelligence functions, but if they do one thing for the war fighter, and it is something we can rehearse with in peacetime, it is probably important.

We need to look to commercial opportunities. We are doing that, particularly with regard to communications. But do not miss the fact that much of the imagery that we used in Desert Storm came from a French commercial source, SpotImage.

"Our space lift is not responsive. We have a vital intelligence program that has been sitting on the pad. It is now a thousand days late for takeoff."

Finally, let's talk about shared efficiencies. There is no doubt that many government agencies other than the military can operate space assets that the military can take advantage of. The weather satellite is certainly one of them. Perhaps we can also help them with, say, controlling the satellites since we have a very large and well developed space control network.

Another problem for space systems is that we tend to look at systems in isolation as functional stovepipes -- for example as either in communications or in intelligence. This tends to lead us to long acquisition times at high cost, just in and of itself. We are not taking a look, for example, where airborne reconnaissance could support space reconnaissance and vice versa.

The real cost of that is time, the time it takes to get a new system. For example, with

Milstar if it takes 10 years to go from requirement to deployment, you are probably going to miss 6 or 8 revolutions in computer and hardware capability.

I can say that we in Space are changing. We clearly know that our job is to support the war fighter. It helps us to identify our true identity and it helps us organize -- I think those of you who have hung around Colorado Springs have seen a change. You have seen a change in the relationship between Air Force Space Command and Unified Space Command.

The Air Force Space Command is a servant for the Joint Force Air Component Commander. We have people today in the Gulf area, and we have people today in Osan [Korea] supporting that function. USSPACECOM is really stepped up. I am very pleased with guys like Vern Conner [BG, USA, USSPACECOM/J-5] for the work they are doing with the other unified commanders to make sure that space remains the servant of the unified commanders.

We still need to clarify our role between the acquisition community and the operations community and we are doing that, but it takes a tremendous culture change on the part of both. Believe me, we are bedeviled by as many problems in Colorado Springs with guys wanting to hang on to R&D functions as we are in, say, Los Angeles with people learning to trust the operator. I can tell you the budget is driving us in the right direction.

I think where we are making the most progress is in our ability to fight the counter space battle. It is something that people have not talked about in the past. It needs to be talked about.

During Desert Storm, we fought counter space. We did it by virtue of diplomacy where we asked the French not to sell satellite imagery to the Iraqis and we asked the Russians not to share space based intelligence with the Iraqis. That was done. We also targeted Saddam Hussein's space capability, and he had some. He had ground stations for communications. It was also interesting in this war that both the United States and Saddam Hussein, Iraq, were using the same ARABSAT for some of our administrative communications.

Today the J-2, Jim Beale [BG(S), USAF,

USSPACECOM], is doing a superb job of looking across the entire world at space capabilities to provide the intelligence preparation of the battlefield for the counter space battle. There is also another individual, Colonel Ben Robinson, who came from Tactical Air Command when I was there as a planner. He has created the Tactical Air Control Center, a space operations center, for fighting the counter space battle. His job will be to get a team out to the unified CINC involved in a future conflict or crisis to advise them on what they need to do or what they can do with regard to the counter space battle. Once that CINC or the air component commander has made those decisions, we will then implement a planning and execution format the same as we do with an air tasking order for airplanes. We are practicing and training to do that and advising the CINCs.

Another area where I take great pride has to do with exploiting the information from space that is already available. I think one thing that both Mike [General Loh] and I are proud of is the cooperation we see between ACC and Space Command. Also Air Mobility Command is deeply involved. We have a detachment at Nellis [Air Force Base, Nev.] for Red Flag. We look to provide capabilities aboard aircraft that the ACC requirements people can further develop and bring into fruition in a supportable system.

"There is a program, Talon Sword, where we take information from space and put it in the cockpit of the airplane. We have done that in the case of firing AGM-88 HARM missiles at radar emitters that the pilot did not know were transmitting."

We have the Talon Shield Program which you may know of. It is a way of taking ballistic missile launch data and combining it with all other kinds of data to provide us the kind of warning we need of ballistic missile launch. More importantly, it will provide us

the ability to target the launch site. In Iraq, Saddam Hussein's mobile launchers were his limiting factor, not the number of Scuds he had. I think it is very important we continue this because of the ability it will give us to provide theater warning with overhead sensors because of the demise of the Follow-on Early Warning System (FEWS).

There is a program, Talon Sword, where we take information from space and put it in the cockpit of the airplane. We have done that in the case of firing AGM-88 HARM [high speed antiradiation missiles] missiles at radar emitters that the pilot did not know were transmitting. He was able to program the data into his HARM missile. We got two hits from an F-16 and an A-6. We are expanding the program to include imagery in the cockpit.

"We need to exploit ideas like smaller satellites. Maybe they will not do a full range of intelligence function but if they do one thing for the war fighter, and it is something we can rehearse with in peacetime, it is probably important."

We are going to move info from space and by space. We are going to take information that formerly was brought down and then spent long periods of time being analyzed in areas far from the battle and then sent forward as they thought we needed it. We are going to have the ability to take this information, give it to the air component commander or people on the JSTARS or AWACS and decision makers who know what they are looking for. When they find it, they will be able to forward it right to the flight leader in the air. That is coming. We are going to empower the majors so when they fight the war they have the information they need to make the correct decisions.

Right now we have support teams in the field. We just visited our team over in Japan working exercise Keen Edge with Dick Myers [Maj. Gen. Richard B. Myers, Fifth Air Force].

They were finding requirements for combined operations in ballistic missile defense. We have a team in Korea because of the added tensions in that part of the world. We also have people working in Bosnia and in the Gulf, as I mentioned.

I think the gaping hole in our defenses continues to be ballistic missile defense. There is a big role in that area for Space in targeting, warning, and tracking missiles before, during and after launch and destruction. As missile range capabilities increase, and they will as is evident by what is happening in North Korea, and as we see legitimate space launch capabilities being subverted to the delivery of weapons of mass destruction, we are going to need more and more space capability. As the range of those missiles grow, the more you need things like midcourse information and tracking which is best done from space.

I think the bottom line for all of this is this: Space is too important to modern warfare to continue business as usual. The old ways of Space are dysfunctional. We need new processes. We need new organizations. We need new acquisition processes. We need to work with the intelligence community and make sure that the operations community is fully aware of what Space can provide. We need emphasis on progress in providing a product to the war fighter that is timely and that the costs associated with that are not prohibitive.

I think theater CINCs are more interested wherever we go. We are looking now for IPLs -- integrated priority listings -- from CINCs which will make hard choices between Space products and, for example, guns. Modern warfare requires the kind of information you need to conduct operations efficiently and with few casualties.

We still have serious problems, there is no doubt about it. We have a national crisis in space lift -- access to space. That is being addressed now in a more serious way than ever before.

We are seeing divergent views come together. We just had a NASA team come in and brief at Space Command. I think we are making progress.

We do need culture changes with regard to lift and certainly we in the Air Force need to be able to change just as rapidly as anyone

**"Aerospace Power:
Regional Conflict
in the 1990s"**

else.

We have new aggressive organizations. The Space Warfare Center out at Falcon Air Force Base [Colo.] is worth visiting. I invite all to come, because it is there to be used. It is not there to perpetuate its own importance.

I think, finally, we are having a growing awareness among all the war fighters on what Space can do for them. That is a direct tribute to lessons learned from Desert Storm. Again, thank you for what you do for us.

General Charles A. Horner

GENERAL HATCH: *Thank you, General Horner. The first few questions revolve around lift. It has been a major subject of your presentation. As you say, the devil is in the details. It appears from the Bottom-Up Review that the DOD choice was an austere life extension of current launch vehicles. We know that you have a current study going on, but a study is a long way from actual planning for a future lift. Can you give us a perspective of how you would like that to play out for the next few years?*

GENERAL HORNER: Well, the problem here is I may wind up preempting the study so I want to be careful. There are two ways to go with regard to improving our space access, or three, if you will. The third way is to contract out with the Russians and the Chinese. If we do nothing, that is the road we are on.

That is not all bad. It provides hard cash for a strapped economy in Russia, provides us low-cost space lift and, quite frankly, very capable systems. Unfortunately, it destroys the industrial base in this country and it makes it difficult for industry to keep high technology scientists. It also has severe impacts on things like our educational institutions. It has a severe impact on all the spinoffs that come from the space industry. I do not advocate that solution.

Then we have the choice of going with the bargain basement option. We take our systems that we have -- the Atlas, the Delta, the Titans, and the Space Shuttle -- and we do those things that we can to make them more efficient. We cut down on the standing armies it takes to launch them. We provide more efficient engines that may be available. Things of this nature.

Another alternative is what they call "leap

technology." That is best exemplified by either single stage or dual stage to orbit. Certainly there is merit there.

I am not a technologist so I am not going to give you an answer. Tom Moorman [Lt. Gen. Thomas S. Moorman, Jr., AFSPACCOM/Vice Commander] has the job of giving an answer that will get through Dr. Deutch [the Honorable John Deutch, then Under Secretary of Defense for Acquisition] and then through the Office of Science and Technology over in the White House. He has a very difficult task ahead of him.

GENERAL HATCH: *Thank you, Chuck. The second question addresses our early warning systems, FEWS, that suffered in the Bottom-Up Review budget cuts. What is the future of our early warning satellite programs?*

GENERAL HORNER: Suffer, isn't that a euphemism for killed? (Laughter)

We need early warning. As long as the Russians maintain the capability to destroy our nation with ballistic missiles, we need the early warning provided by the DSP satellites. In Desert Storm we were able to successfully detect the launch of theater ballistic missiles, lower burning missiles. We were blessed for a number of reasons. Because of where the missiles were launched with regard to the satellite, because of the number of satellites we had on orbit, and because it was winter in the desert we were able to see those launches and provide warning.

However, we could not provide the theater JFAC with information on the launch location. Information that he needed in order to attack those sites. I happen to know him very well. He came out of the war extremely upset about that. So, we have a stable of warning systems that is designed to meet our

"strategic needs." It does provide us capability that we can use for theater operations. When they run out, we need to replace those systems with a new system. There is no reason to believe that the new system cannot be less expensive and more capable than the ones we have. It is just a function of time and the time will occur sometime after the turn of the century when the older stable holder system is used.

GENERAL HATCH: *Thank you, Chuck. The next question for General Horner states that "You've taken a strong stand in the past in support of BMD systems and ASAT [anti-satellite] systems, do these remain high priorities on your list?"*

GENERAL HORNER: Well, I think the number one deficiency we have in our defense of our forces, whether it be overseas or in the United States, is protection against ballistic missile attack. If we're planning for attack from the Russians -- the Cold War scenario -- then we're faced with one problem with ballistic missile defenses.

More than that, if the Cold War fades, and of course with events in Russia you never know, what is to replace it? We now see that these weapons are going to be used in theater warfare.

Probably the new war that we will see is the war against nuclear proliferation. It will be a war of diplomacy, a war of peacetime measures, embargo, and even hot conflict. A subset of that war is the use of ballistic missiles because that is the best way to deliver those weapons because that is where the defense is weakest. I think that ballistic missile defense is fundamental. We often differentiate between theater and national systems and that is probably not appropriate.

The other thing that is very important is that we take a look at what ballistic missile defenses will do for us in regard to fighting the war of non-proliferation. For example, Russia has nuclear weapons to deter the United States, and the United States has them to deter Russia. Neither nation, certainly at this time, has any intention of attacking the other. So, in this era of strapped budgets, how do we reduce the threat and how do we reduce the cost of ownership of these systems? One way is to provide an inducement to the Russians, be-

cause their problem is not the United States. Their problem is with North Korea, China, India, Pakistan, Iraq, Iran, Afghanistan, and countries that ring their southern border with ballistic missiles.

If we could share ballistic missile defenses with them, it would give them the added security they need to go the round in the disarmament process through START II, III, IV, etc. If we could share ballistic missile defenses over a wide area, think what it would do for those nations that have nuclear weapons for their own defense. For example, Israel is purported to have nuclear weapons. Certainly the threat that they fear most is a ballistic missile attack, so they feel they have to have nuclear weapons to deter that. If we could assure them ballistic missile defense, and the price of admission would be to give up their nuclear inventory, think what that would do for the stability of the world and also for the stability of the Middle East.

There is a lot of opportunity as we develop awareness of the threat and develop political consensus to use ballistic missile defense as a key function in this war against proliferation of nuclear weapons. If we went to zero nuclear weapons along with the Russians, arm in arm, think how intolerant our nation would be of those nations who decided to develop those kinds of weapons. It would put real teeth in our anti-ballistic missile nuclear weapons strategies.

GENERAL HATCH: *Very good answer, sir. The final question for General Horner combines two. First, how do you feel about making very high quality satellite imagery available on the commercial market and there is a parallel question about GPS and very high quality navigational data?*

GENERAL HORNER: Of course, we already face the imagery issue. It is a question of whether we are allowed to get into the business marketplace or not. With regard to GPS, we have a fundamental problem here. Obviously GPS is available to anybody now. Through selective availability, we have provided a means to inhibit the accuracy of the system. That will only last so long, because a differential GPS gives people the ability to take that error out.

To me GPS is something that we are

going to share with our enemies. The trick then is how do you keep the enemy from having GPS accuracy sufficient to deliver precision munitions? We should reserve that for ourselves and deny that level of accuracy to the enemy. So, I think the next stage beyond selective availability is to go to some sort of a local area jamming system. I think that would be something people involved in

electronic combat have already thought of and need to begin working on because that is going to be the next counter counter measure involved in this war of electronics on the battlefield.

GENERAL HATCH: General Horner, thank you very much for a very interesting presentation and thanks for all you do.

24 **"Aerospace Power:
Regional Conflict
in the 1990s"**

"Regional Frictions and Fault Lines: American Forward Presence and the Asian Economic Bullet Train"

The defense budget is headed south. By almost any measure, the United States Air Force, since the mid 1980s -- in terms of aircraft, personnel, missiles, bases -- has been reduced by about 25 percent or more depending on the category you want to talk about. This economic impact has been felt in the local communities, and there has been a cry to bring the troops home from overseas. It's that subject I'd like to talk about today -- the need for overseas presence of U.S. forces.

It's important to remind ourselves what can happen if we do not remain prepared. This is a photo of Hickam Air Force Base on December 7, 1941. That's my headquarters in the lower left. And this is what it looks like today. You will notice that we've retained the shrapnel scars on the sides of the building to remind us of what it means to be unprepared. Notice the Toyota in the foreground.

This photo is of the master sumo champion, the Yokozuna. Sumo is Japan's national sport. He's about 6' 8", weighs 466 pounds. His Japanese name is Akebono, but his real name is Chad Rowan. He's an American; in fact, he's from Hawaii. I think Akebono being named national Sumo champion of Japan, and the Toyota in the foreground of the previous photo speak to what's happened in the evolving relationship between our nation and the nations of Asia.

"It's also an area where only the United States of America has both the credibility and the capability to maintain stability."

Let me review PACAF's area of responsibility. It covers over a hundred million

square miles -- about half the world's surface, and includes about two-thirds of the world's people. It boasts some of the fastest growing economies in the world.

Question: Why do we need 43,000 United States Air Force personnel and over 400 aircraft stationed in the area? There are several reasons. It's an area that's been troubled by conflict for many years. It's also an area where the U.S. has vital interests -- interests considered so significant that we have sacrificed 240,000 American lives there in three wars during my lifetime. It's also an area where only the United States of America has both the credibility and the capability to maintain stability.

We have many interests in the area, not the least of which is trade. Over \$360 billion worth of two-way trade between the U.S. and Asia in 1992. Over 40 percent of our imports come from Asia, and about 30 percent of our exports enter the Asian community -- more than any other area in the world.

Much has been said about NAFTA. Compare South America to Singapore and South Korea -- we export more to those two Asian nations (\$24.3 billion) than to all of South America (\$23 billion). Add Taiwan into the equation. The three Asian nations import more U.S. goods (\$44.7 billion) than all of Central and South America (\$35 billion). U.S. exports to Chile (\$2.4 billion) and Brazil (\$5.7 billion) -- two of the most vibrant economies in South America -- are far less than to Singapore (\$9.6 billion) and South Korea (\$14.6 billion).

Asian economies have been riding a bullet train for some time. If you're looking for the U.S. line, it's the one on the bottom -- GDP below 2 percent since 1990. Look at what's happening in China -- 13 percent GDP



growth in 1992. There's a 700-seat McDonald's in Beijing that charges about two dollars for a typical meal -- that represents about 7 percent of the average monthly salary. And it's always full.

Recently in Singapore, I had the opportunity to talk to businessmen there. They tell me they're investing capital in China as fast as they can move it. They feel secure about doing that. They obviously have their reasons. Perhaps it's related to the Hong Kong stock market's 63 percent rise since 1992 as they prepare for re-integration with China.

I said it's a troubled area. And of the world's ten largest armies -- China, Russia, the U.S., India, North Korea, South Korea, Vietnam, Pakistan, Iran and Iraq -- seven are contained within the area. We normally think of Russia as being a European power. However, in the Far East Military District they have nearly 300,000 personnel and almost four times the number of airplanes I do. Almost all are third or fourth generation. If you wondered what happened to all of those Soviet airplanes that came out of the Eastern European countries -- most of them showed up in the Far East Military District. Note the comparison between North Korea (1.1 million troops) and Iraq (430,000 troops); it's a sizable force.

"I said it's a troubled area. And of the world's ten largest armies -- China, Russia, the U.S., India, North Korea, South Korea, Vietnam, Pakistan, Iran and Iraq -- seven are contained within the area."

For a lot of reasons we've got a mini-arms race going on in Asia right now. In fact, about 25 percent of all arms sales are occurring in that part of the world. First, there's a feeling of insecurity. The Cold War had certain checks and balances that provided a sense of stability there. Second, there is a perception that the U.S. is about to withdraw its forces -- a recurring theme throughout the area. Third, arms are available at bargain basement prices, thanks to drawdowns else-

where; and they can afford them.

Japan spent over \$36 billion last year on defense. I need to point out that about \$4 billion of that goes toward U.S. forces stationed there in terms of host nation support. That covers Milcon [military construction projects], even the utilities at our bases. They are carrying their share in that regard. And don't be misled by other figures in this slide showing defense spending by Asian nations. It is difficult to say what a nation is spending on defense. The whole story is not only what they're spending; it's what it costs. I think we're all aware of the old joke that says, "What do you call a fighter pilot with an IQ of 160? A flight of four." Similarly, "What is \$1,600 in the PRC [Peoples Republic of China]? A squadron." The senior officer in the Chinese army today makes about \$300 a month. A young enlisted man in the North Korean armed forces makes about five dollars a month, so it's all relative.

Let's talk about the tyranny of distance. If a conflict breaks out in Korea tomorrow, and if we had our Marines already aboard ships on the west coast of the United States, it would take them about 19 days to get there. It's a long way. We might have a few fast sealift ships that might reduce that to 10 days. But air forces are going to be key in any engagement in that area simply because of their speed in closing and the distances involved.

Our theme in the Pacific AOR [area of responsibility] is places, not bases. What we mean is that it's not so important for us to have bases throughout the area -- it's important, though, that we have places that we can operate out of should a contingency arise. As a result, we are doing everything we can to improve the relationships between the U.S. and the nations with which we are actively involved. In that regard, we conducted 56 air exercises last year. For example, TEAM SPIRIT and FOAL EAGLE in Korea; KEEN EDGE and COPE NORTH in Japan; COBRA GOLD in Thailand; COPE WEST in Indonesia; COMMANDO SLING in Singapore; and BALIKATAN in the Philippines. Why so many exercises? When I was in Europe, I could exercise with six or seven nations at a time. In the Pacific, we can't do that. Name

two nations in that region that have had a close and continuing relationship. I'll give you the first two -- Australia and New Zealand. You give me the next two. Everything we do out there is on a bilateral basis. It is very, very difficult to get people together in the area simply because there's so much distrust among neighbors. There is no collective defense organization, such as NATO, within the region.

Let me talk about some of that distrust, why it exists, then I'll move into some of the current hot spots. Pardon a little reflection on history here. We're all aware that Japan basically took on all the nations in the region in WWII. But prior to WWII, Japan was involved in conflicts with Russia, China and, of course, occupied Korea for almost 40 years. China has had problems with Russia and India as well as Vietnam. India has fought three wars with Pakistan. Pakistan and Bangladesh fought a war of secession. There are insurgents in Sri Lanka. Malaysia had their problems with an insurgency. So did Indonesia. So did the Philippines. Thailand had problems along the Cambodian and Burma borders and, of course, we know the story in Vietnam. My point is that the area has a long history of armed conflict.

"Air forces are going to be key in any engagement in that area simply because of their speed in closing and the distances involved."

Now let's move on to some of the current hot spots -- the Spratly Islands. Very few people could identify what they are or where they are. Nevertheless, it's a potential hot spot. The Spratlys are a series of islands in the South China Sea that are claimed by six nations. The dispute concerns fishing rights -- because the fishing is very good in the area -- and oil. The Chinese at one point estimated that there's \$2.5 trillion worth of oil underneath those islands. And the islands sit astride major shipping routes -- 25 percent of the world's shipping tonnage passes through that area.

Some of these are very small islands -- one is just big enough for two people to stand on, when it's not submerged! But there are people willing to back their claims with arms if necessary and, in fact, that has occurred already. Currently, the situation appears fairly stable and peaceful. The Chinese have agreed to co-development of the islands' oil resources. How long that will last remains to be seen.

Another area of concern is India and Pakistan. All of India, Pakistan and Bangladesh comprised one country prior to 1947. When the British left, they split the area into India -- primarily Hindu, and Pakistan -- primarily Muslim. They have fought three wars since -- one in '47, one in '65, one in '71. There is continuing friction over Kashmir. As you look at the armed forces out there and compare them, you can see that India outweighs Pakistan considerably. You might say, "Well, why do we care?" I think the reason we care is both forces are assessed to have nuclear weapons and the capability to deliver those nuclear weapons.

Last but not least, the Super Bowl of hot spots today -- North and South Korea. The North and South are about the same size geographically; they speak the same language; they're both armed to the teeth; and that's where the similarities cease.

The North Korean Force in quantitative terms is about double that of the South Korean force. You might think the U.S. presence would make up the difference. However, in relative terms the number of troops we have on the peninsula is very, very small.

The real issue, of course, is how fast might the North move South if they chose to. They've got about 70 percent of that sizable force located within 60 miles of the border. It's been estimated that they have more than 4,000 artillery pieces and 2,000 rocket launchers on that border, many of which are within the range of the outskirts of Seoul. Remember that Seoul is a city of about 10 million -- about a quarter of the population of Korea.

It's instructive to look back to the summer of 1950. Seoul fell in four days. Think back to that tyranny of distance I spoke of earlier. We're going to have to react immediately if a crisis arises. Our initial response, should that be required, is going to have a

significant impact upon the outcome of any conflict in that part of the world.

"It's instructive to look back to the summer of 1950. Seoul fell in four days. Think back to that tyranny of distance I spoke of earlier. We're going to have to react immediately if a crisis arises."

I hope I've made the case for forward presence because I remain firmly convinced

that no economic commission, no political statement, no U.N. resolution is going to have the impact that U.S. military forces have in securing the stability and continued peace within this area. It's absolutely essential that we stay there. Nevertheless, an Orlando Sentinel poll last year revealed that 70 percent of respondents said it was "time for the United States to pull its troops out of Asia." I hope that's only because we have not done an adequate job of explaining U.S. national interests in Asia.

Thank you very much for your time. I certainly appreciate this opportunity to speak to you, and I welcome your questions.

Question & Answer Session

"Regional Frictions
and Fault Lines:
American Forward
Presence and the
Asian Economic
Bullet Train"

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General Robert L. Rutherford

GENERAL HATCH: *Thank you, General Rutherford. It certainly is an interesting time in the Pacific. There are a number of questions concerning Korea. In the Gulf War, the enemy waited for us. We had plenty of time. We had opportunity to prepare ourselves. The Bottom-Up Review set a very formal approach to war -- stop the assault and reinforce -- yet, none of these conditions exists in Korea. What preparations are we going to take? For example, a recent piece of legislation passed by the Senate talked about preparing to reintroduce nuclear weapons to South Korea. Could you expand on this major area for us a little bit more?*

GENERAL RUTHERFORD: The first question deals with how we react to North Korean movements. First, I would probably tell you it is the most surveilled piece of real estate in the world today. I think we will have some warning if they elect to move south. Second, the South Korean force is a very capable force. I think they can react on short notice and I think they will give a very, very good account of themselves. I do think it is essential that America be prepared to move and move rapidly. I can assure you that we have reviewed our plans and if the need arises we are prepared to do that.

As far as introducing nuclear weapons into South Korea, reintroducing nuclear weapons into South Korea, if we ever had them there, that is a question that will have to be debated at pretty high levels and I cannot comment on that today.

GENERAL HATCH: *Thank you, General Rutherford. TEAM SPIRIT is an important training exercise. How will the method of preparation for it proceed?*

GENERAL RUTHERFORD: That remains a very significant question at this time.

We will continue to prepare for TEAM SPIRIT this year. We are going through the planning phase. Whether it is held or not, again, is a political question that will have to be answered. At the same time, we do a lot of other smaller scale exercises that are equally beneficial to our ability to operate with the South Koreans so I would not be overly concerned with a loss of TEAM SPIRIT, although it is of some concern.

GENERAL HATCH: *Thank you, Skip. The next question concerns the Japanese, particularly the current talk of possible economic sanctions between the two nations. What impact would such actions have on our level of military cooperation between the two countries?*

GENERAL RUTHERFORD: I would hope none because it is very good right now. We have a very close working relationship with the Japanese Self-Defense Forces. Even more important, as I mentioned earlier, the Japanese are paying a good share of the cost for the forces that are deployed there. I threw out the number of \$4 billion. So, it is a sizeable commitment and one that I would hate to see impacted.

Obviously the forces that we have deployed in Japan and the access to Japanese bases is absolutely critical if something should break out in that part of the world.

GENERAL HATCH: *Thank you, General Rutherford. The next question notes that you have three and a half wings deployed as a result of the reorganized force structure. Do you find that sufficient and how is your level of readiness -- support, and dollars and training?*

GENERAL RUTHERFORD: I would like to have 20 wings. Three and a half is adequate for current needs and for our mis-

sion as we see it. We will just have to see where we go from here and how it plays out.

GENERAL HATCH: *Here is the final question. General Rutherford, you are doing a lot of training in Alaska these days. How is that training going and what impact does that have on your operations?*

GENERAL RUTHERFORD: We have moved our COPE THUNDER Operations from Clark [Air Base, Republic of the Philippines] to Alaska, almost in toto. It is a very good training area. We are conducting excellent training there. We are just about to finish the instrumentation of our ranges. It will come close to rivaling RED FLAG, although it is not a direct competitor for RED FLAG by any stretch of the imagination.

The thing that we have lost by moving to Alaska is the proximity to nations in Southeast Asia. By moving north we have made it almost impossible for many of those nations to bring their forces up to Alaska to train with us and that is not good. I will say that some of the nations continue to train with us in Alaska.

I was in Alaska in August, up in an AWACS, and watched the Singaporeans fly with our forces in exercise COPE THUNDER. I watched them come out and set up a CAP [combat air patrol] with our F-15s in an air superiority mission. I watched the aggressors come in. I watched the Singaporeans pass off to our forces a portion of the battle;

they took on the other portion. I was amazed at the interoperability of the forces; that only comes as a result of the training we have done with the Singaporeans over the years. These exercises are very worthwhile in many ways.

You asked about our readiness earlier. Let me say that the Air Force in the Pacific, our Air Force in the Pacific, is the most respected air force in that area of the world. It is respected because it has proven it is capable of doing the job day in and day out. We are as ready and as capable today as we have ever been.

General Loh was asked this question earlier and he said, "I am concerned about lead time away." I am equally concerned about lead time away. We are continuing to shrink logistics funding and we are making some very definitive decisions with the precision of a knife and the outcome, in some respects, is like hitting it with a sledge hammer. I am afraid that maybe we have gone a bit too far. Right now, I am very concerned about logistic support. It is not showing up right now, but again, this is one of those things that does not show up until two or three years down the road. I think we are in excellent shape right now, but I do have concerns about the future. Thank you.

GENERAL HATCH: *Thank you, Skip, for being here with us today. (Applause.)*

"Technology Transition: From the Laboratory to the Battlefield"

I am delighted to be here. As a matter of fact, I am honored to stand on this stage with such an illustrious group.

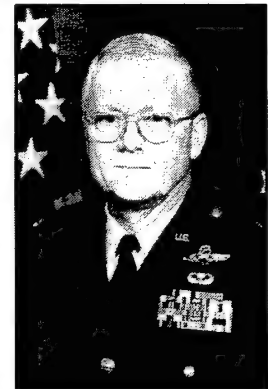
You know, we never get tired of learning. Today I want to talk to you about something we are still learning about, technology transition. General Loh said it is critical. We all believe it is critical.

INTRODUCTION

- TODAY'S ENVIRONMENT: CHALLENGE
WE'RE GETTING SMALLER
- WE MUST FOCUS AVAILABLE RESOURCES
BOTH GOVERNMENT AND IR&D
- BEST PRODUCT FOR OUR \$

If you look at what is going on today, we are shrinking. It is very important that we all get the optimum advantage of our dollars. It has been a dream of mine ever since I have been in this business to be able to explain to the contractors where we are trying to go and for them to be able to believe it, and not to think that they had the latest directions from just one office. So, the Air Force is off trying to develop a process that will allow us to do just that. I am here today to walk you through that process.

In walking you through that process, I want to encourage you to participate because without your participation we will only have one side of it. It is also very critical we leverage every dollar that we have available. It is very critical in this down turning environment that we do not lose sight of the future. We have all these issues demanding our attention, and all of them are demanding our dollars. We cannot eat our young and leave our country and our Air Force to our children in worse shape than we found it.



PURPOSE

- AFMC IS FORMULATING A NEW, EFFICIENT, AND DISCIPLINED PROCESS TO FULFILL BATTLEFIELD NEEDS WITH THE RIGHT TECHNOLOGIES
- YOUR INVITATION TO PARTICIPATE:
 - WHAT WE ARE GOING TO DO
 - HOW ARE WE GOING TO DO IT
 - WE NEED ALL THE PLAYERS: JOIN US

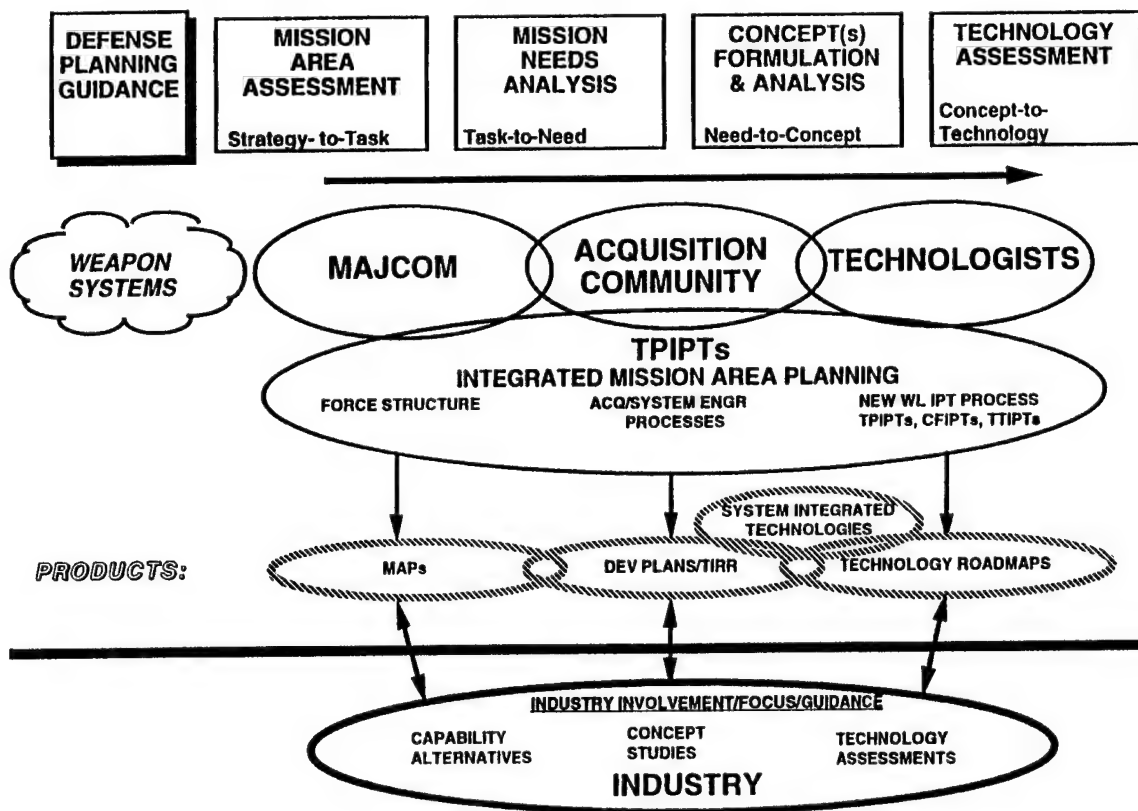
AN EFFICIENT AND
EFFECTIVE TEAM IS
THE BOTTOMLINE

In order to understand a process one must be able to put it on one chart. So, there it is, one chart. I have learned my lesson. I can carry this process to the Senate and explain it on the way up from the basement on the elevator ride.

Today I am going to take a little bit more time and explain all aspects of this process to you, because I think it is critical that you understand and you see where you can play in the process.



INTEGRATED TECHNOLOGY MASTER PROCESS: Global View



What I would like to do is take the four major steps and then, I would like to explain each one of these major steps. We will walk through the how, the product, who does it, and how you can play in that process.

The first thing I would like to talk about is a strategy-to-task. General Loh talked to you about that. This process both starts and ends with a user, as it should. We are going to look at national strategy and we are going to come down to operational task.



THE MISSION AREA ASSESSMENT ARENA Mission Area Plans (MAPs)

"Technology Transi-
tion: From the
Laboratory to the
Battlefield"

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- AFSOC

- COMBAT SUPPORT
- PSYOP

⋮

- AMC

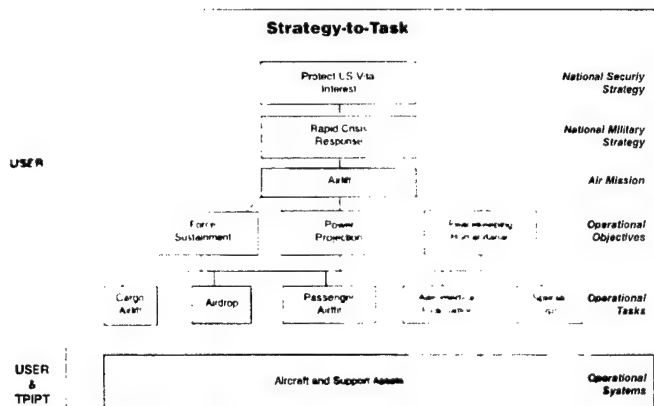
- AIRLIFT
- AIR REFUELING

- ACC

- SURVEILLANCE & RECONNAISSANCE
- THEATER MISSILE DEFENSE
- COUNTERAIR

⋮

User Requirements: Example: AMC Airlift



This is an example. We have some 36 of these in the Air Force today. The one that I picked to show you is airlift. They start off with national security and the operator, the user, works himself down to the operational task. This is the user's domain. This is where he determines how he is going to satisfy those national strategies.



INTEGRATED TECHNOLOGY MASTER PROCESS ARENAS

- Strategy-to-Task



- Task-to-Need



- Need-to-Concept



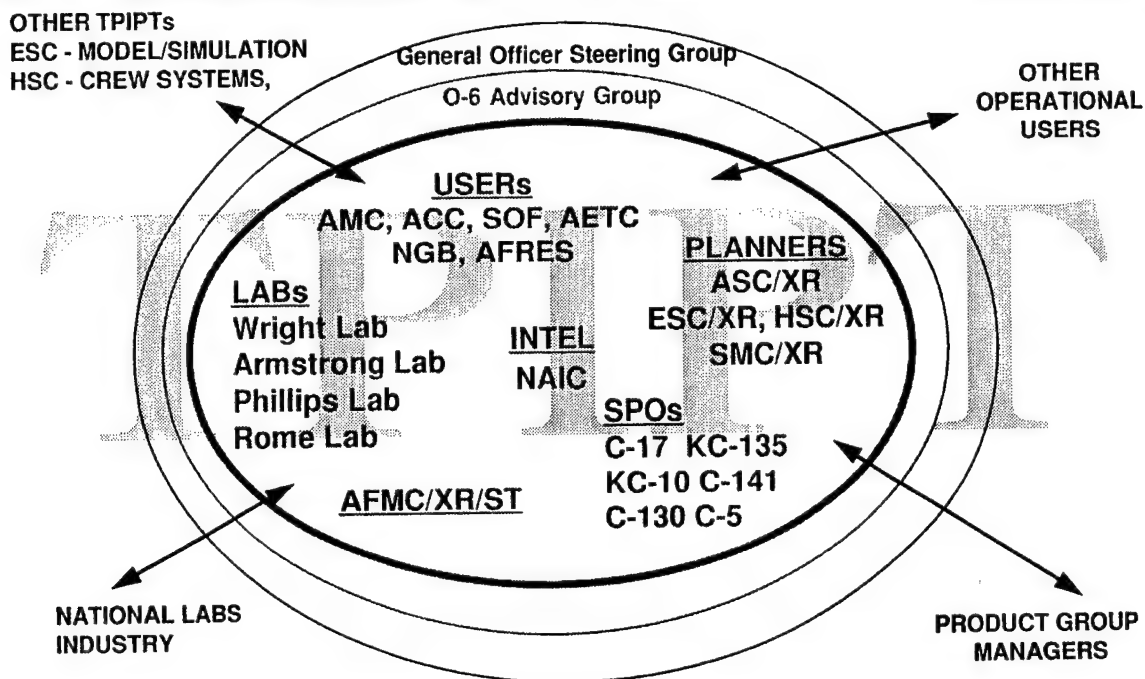
- Concept-to-Technology



Now I would like to talk about where we come into it and that is a thing called the TPIPTs. I am sure you have all heard that and you all wondered what TPIPTs means. Well, depending on who you want to talk to it is either technology or technical planning integrated product team.



TECHNOLOGY PLANNING INTEGRATED PRODUCT TEAM



A TPIPT is all the people necessary to come together to work those operational needs into technology issues. So, it is made up of the users. It is made up of all the planners and if you look at our product centers at AFMC, those are all our XRs, those are our development planners. We bring in the SPOs [system program office]. The SPOs are a very critical aspect of this. In the past, as we have done our technical planning, we have determined what technology we needed. But, we did not always ensure that we had the supporting technology necessary to make that happen.

I know when I was running the ATF [advanced tactical fighter] I was extremely upset that I had to put in over 2,000 pounds of wire just to run the electrical energy from the generator back to distribution boxes. We have the technology to reduce that, but it was not sexy. It was never thought about. So, those are the kind of issues that we are going to have to struggle with if we are going to leverage all our dollars. In order to do that, this is a process. We will bring the labs in, we intend to involve national laboratories and industries. The reports out of these TPIPTs will be made available, and we are looking for comments. All the members of this group come together and they work the issues.

Now, let me show you the TPIPT's process.

"Technology Transition: From the Laboratory to the Battlefield"

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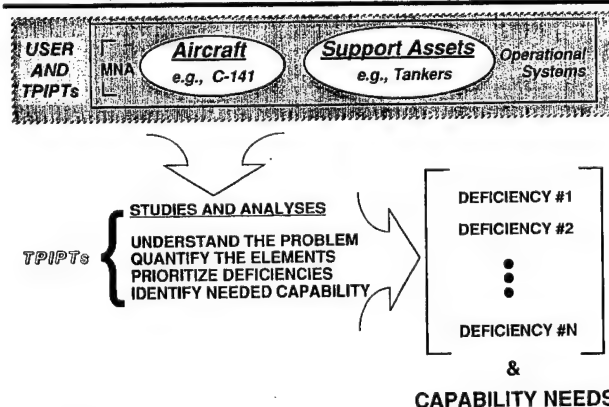
PRODUCT CENTER TPIPTS

ASC COUNTER AIR ELECTRONIC COMBAT AIR-TO-SURFACE SPECIAL OPERATIONS MOBILITY AIRCREW TRAINING COMBAT SEARCH & RESCUE BASE OPERABILITY & DEFENSE	SMC FORCE ENHANCEMENT SPACE SUPPORT MISSILE DEFENSE STRATEGIC ATTACK (SPACE) COUNTER SPACE
ESC BATTLE MANAGEMENT C3 WEATHER RECC/SURVEILLANCE/INTELL STRATEGIC AIR DEFENSE MODELING / SIMULATION	HSC HUMAN SYSTEMS INTEGRATION ENVIRONMENT, SAFETY, AND OCCUPATIONAL HEALTH OPERATIONAL MEDICAL SUPPORT

Here are the TPIPTs that we have. At ASC [Aeronautical Systems Center], we are the lead for these TPIPT areas. These areas came from the users, so we set our TPIPTs up to support their users and their maps. At ESC [Electronic Systems Center] they have these and these at SMC [Space and Missile Center] and HSC [Human Systems Center]. Now, that center is the lead. So, if you want to know something about that TPIPT's area you go to that center and they are the lead, but each one of those TPIPTs is made up of people from all the centers, across all of AFMC, necessary to bring to bear the information we need in that TPIPTs.

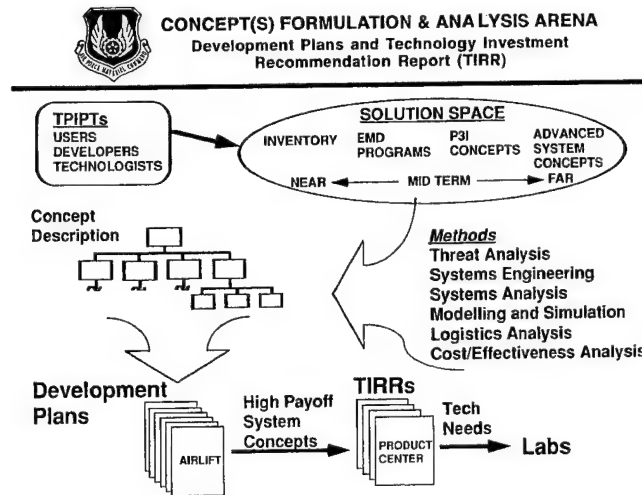


THE MISSION NEEDS ANALYSIS ARENA



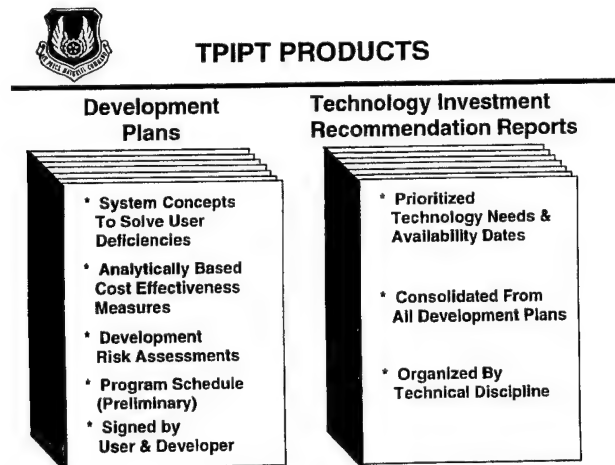
What does the TPIPT do? The TPIPTs take the maps that the user has developed. They come to the operational systems through studies and analysis looking at the elements, prioritizing the deficiencies and they generate a list of deficiencies. Those deficiencies are rank ordered from one to #N. They do not stop there. After they get the deficiencies, they identify capability needs. We insisted they do that so we do not end up with a short term focus. If we are not careful, these deficiencies will drive us to look five years in the future. What we want to do is to look beyond that. There is a potential to solve a number of deficiencies if we look out into the future. So, we developed a series of capability needs.

**"Aerospace Power:
Regional Conflict
in the 1990s"**



What do we do with those? Here is the process. The TPIPTs look across the entire inventory. They start off with today's tactics. Can we solve those deficiencies by changing our tactics? We have done that lots of times. Then they look at the inventory. Are there things in the inventory that we can bring to bear to solve these issues? They go across the current programs, out to the P3I [pre-planned product improvement] guy and on out to the advanced systems.

They look across the entire inventory, they use methodologies that we have available to us today, including modeling and simulation, and most importantly in today's environment, they look at the cost effectiveness analysis. Out of that they develop a series of concepts, not one but a series. Those concepts are contained in development plans.



There is a development plan for each TPIPT so there are 21 development plans. In that are all those concepts that they think are appropriate that will support those deficiencies and those needs that the user and the technical communities identify. They then rack and stack those in four reports by product center. We take the TPIPTs for which the product centers are the leads and we put them in this report. It is called a Technology Investment Recommendation Report (TIRR), and that is what we provide to our labs to drive their technology road maps.

The development plans tell us the system concept, how we can look at those deficiencies, and the risk assessment. It also establishes an up front schedule. We have to be able to do that so we can start putting some cost effectiveness on this. Then we prioritize all of those TIRRs into what we need and we make them available to the technologists so they can coordinate them based on their thrust.



THE NEW WRIGHT LABORATORY INTEGRATED PRODUCT TEAM PROCESS PHILOSOPHY

"Technology Transition: From the Laboratory to the Battlefield"

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- Informed customers / suppliers
 - The warriors become advocates of critical technology
- Technology orchestration
 - WL quarterbacks the air vehicle technology team
- Clear strategic framework:
 - System integrated technologies
 - Resource allocation
 - Strong U.S. technology base
- Empowerment
 - Right people / right jobs

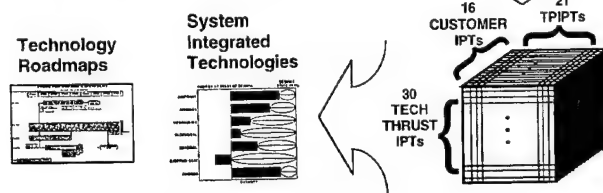
I would like to show you a little bit about how the laboratory takes those and then how they turn those into programs.



TECHNOLOGY ASSESSMENT ARENA System Integrated Technologies/Technology Roadmaps

• TPIPTs / NEW WL IPT PROCESS

- TPIPTs:
USER REQUIREMENTS → TECH NEEDS
- LABORATORY IPTs:
TECH NEEDS → SOLUTIONS



This is the process. The TPIPTs interact with the laboratories, and in our case it is Wright Labs. They take those requirements which we have turned into technology needs and they generate solutions. This is the way they do that. Basically, what we have is mission needs here, and we develop this bridge. We have always had our technology thrust, where the technologists think they have the greatest opportunity to expand. They look at that from a purely technical point of view and say, "Does this area give us an opportunity? If we spend some money here could we have a break through?"

What we have developed that is different are these customer Integrated Product Teams, (IPT). These are the bridges because these end up being systems. If you just look at these mission areas and you look at the technologies, you can develop a plan that will not allow you to develop a system. For example, when I looked into my laboratories, I found that we were spending lots of money to develop the next generation of detectors for IR sensors. When I looked for the window to support those detectors, it was not there. No one had thought the process through from a system perspective.

So, the user talks to us about his needs and deficiencies; the laboratories talk to us about their technologies; and we have a bridge. This system allows them to support these mission needs and allows the technology to make that system happen.

Here are the technology planning IPTs once again so you can see where they are.



TECHNOLOGY PLANNING IPTs

NAME

ASC

1. COUNTER AIR
2. ELECTRONIC COMBAT
3. AIR-TO-SURFACE
4. SPECIAL OPERATIONS
5. MOBILITY
6. AIRCREW TRAINING
7. COMBAT SEARCH & RESCUE
8. BASE OPERABILITY & DEFENSE

ESC

1. BATTLE MANAGEMENT C3
2. WEATHER
3. RECCE/SURVEILLANCE/INTEL
4. STRATEGIC AIR DEFENSE
5. MODELING/SIMULATION

These are the technology thrusts. We have 33 of them, and they are located in these 6 major areas. This is where our technologists look to determine where they think they can best spend our dollars.



TECHNOLOGY THRUST IPTs

NAME

Avionics

1. Targeting & Attack Avionics
2. Electronic Warfare Technology
3. Systems Avionics
4. Electron Devices

Flight Vehicles

1. Aeromechanics
2. Structures
3. Control Science & Technology
4. Cockpit Integration
5. Vehicle Subsystems
6. Technology Integration/Flight Demonstration

Materials & Processes

1. Structures, Propulsion & Subsystems
2. Electronics, Optics & Survivability
3. Systems & Operational Support

NAME

Armament

1. Advanced Guidance
2. Weapons, Flight Mechanics
3. Ordnance
4. Instrumentation

Manufacturing Technology

1. Aircraft
2. Missiles & Munitions
3. C3I Mission Electronics
4. Space & Launch
5. Aerospace Sustainment
6. Manufacturing Systems
7. Advanced Manufacturing
8. Manufacturing 2005
9. Defense Production Act

Propulsion

1. Turbine Engine
2. Fuels & Lubrication
3. High Speed Propulsion
4. Aerospace Power

Then, we look at our systems, the kinds of systems that an acquisition community would deliver. We have developed these systems. Notice that we added one to ensure that we did not eat our young and that is called the core technologies.

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CUSTOMER FOCUSED IPTs

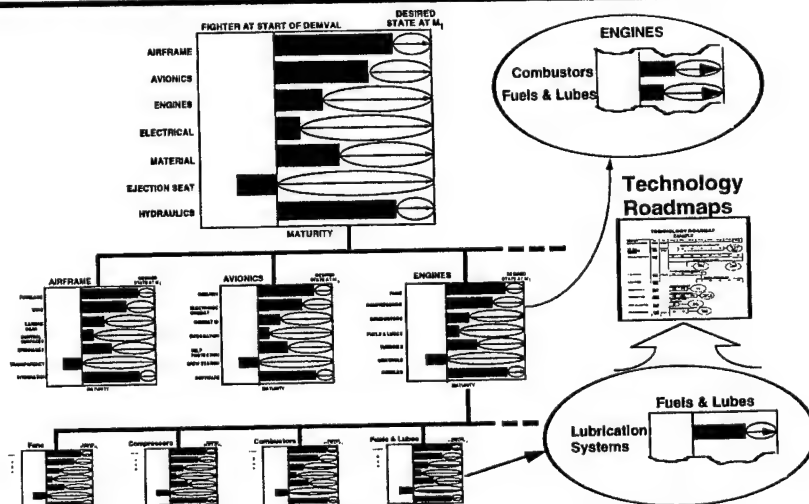
NAME

1. FIGHTERS
2. GLOBAL AIRLIFTERS
3. BOMBERS
4. INTRA-THEATER TRANSPORTS
5. SOF
6. UAVs
7. WEAPONS
8. HIGH SPEED AIR VEHICLES
9. SPACE SYSTEMS
10. AIR BASE SYSTEMS
11. ALC INFRASTRUCTURE & SUPPORT
12. T&E CENTER INFRASTRUCTURE & SUPPORT
13. SAR PROGRAMS
14. POLLUTION PREVENTION
15. AGING SYSTEMS
16. CORE TECHNOLOGIES

How do you use those things? If you want to develop a fighter, as an example, you need certain technologies. When you start your EMD [engineering and manufacturing development] program you need all those technologies to be at the same level of maturity or otherwise you cannot generate your fighter, as General Loh said, at low risk and at an understandable dollar value. So, what you are trying to do is involve all the technologies necessary to bring that weapon system to bear. So, if you will use a WBS [work breakdown schedule] mentality, this is level zero. The things you have to do to make engines are these kinds of things: fans, compressors, combustors, and fuels and lubes. We work all the neat, sexy stuff but some times we do not work the stuff that might prevent us from delivering a system.



SYSTEM INTEGRATED TECHNOLOGIES EXAMPLE



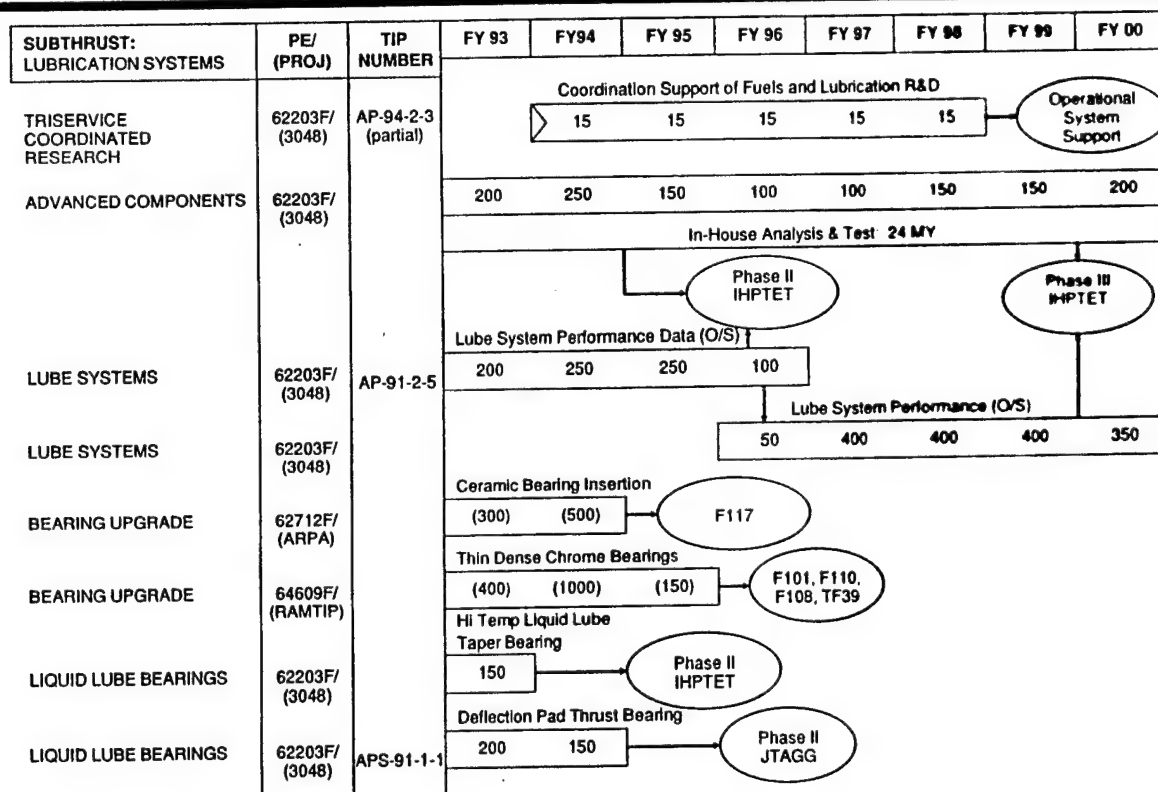
**"Aerospace Power:
Regional Conflict
in the 1990s"**

By having this kind of road map we can look and see where fuels and lubes are in relation to the capability to bring the next engine on. Then you can break this down further -- fuels and lubes need their own set of technologies.

Here is an example. You will see the things we are developing by this concept so that we can clearly understand what it takes to make a system occur. It is one thing to understand what the user needs from the mission area perspective. It is another thing to understand where the technologists think that technology is best capable of. But you have got to have that bridge. You have got to build that weapons system and you need these kinds of discipline in order to make proper decisions as to where you spend your dollars.



TECHNOLOGY ROADMAP EXAMPLE



For example, here is a technology road map that absolutely is the fuel and lube road map at the Wright Lab to support the next generation of engines. We know how much money we have to spend. We know what they do, and we know what programs they are supporting and where they are going into the future. The lab is doing this. It is a new concept. They are developing this kind of breakdown, this kind of discipline, so that they can bridge between the maps that the using community generates and the technology thrust that we have been pointed towards.

For example, I have the TPIPTs, customer focuses, and my technology thrust. If you pull out this drawer, then you look from your mission area needs, and you see how they support systems. This allows you to look across the board and ensure that you are getting the proper utilization of the technologies you are working. For example, one TPIPT has to do with mobility. Over here I have a customer focus that has to do with fighters and so there are cockpits in this TPIPT drawer -- cockpit integration. So, from a mobility point of view I will need that cockpit integration, and from a fighter point of view I will also need it. I can ensure that I get optimum utilization from both.

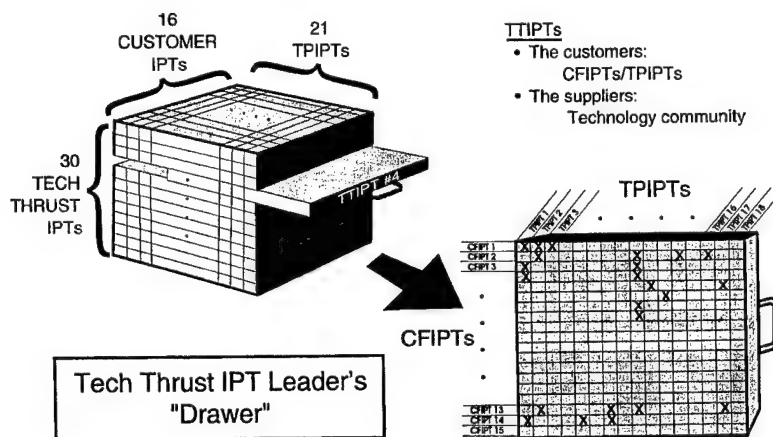
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TECHNOLOGY THRUST IPTS

TEAM LINKAGE IS VITAL

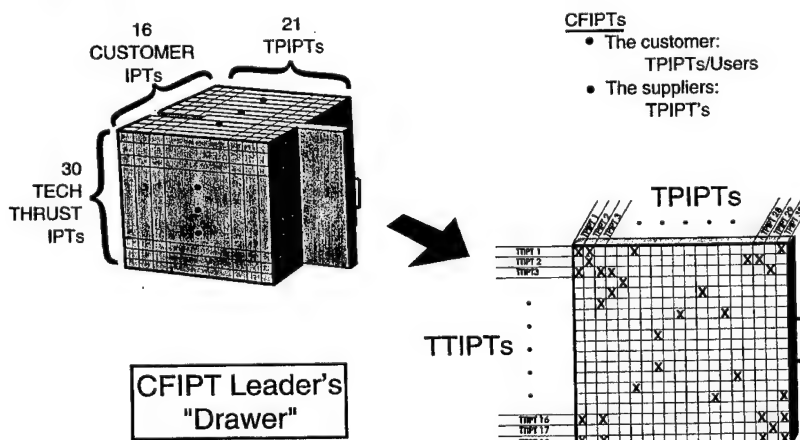


If you want to look at it from a customer focus for fighter aircraft, you would say "I need to have application across the various TPIPTs and my technology thrust in engines would be applicable to my TPIPTs supporting mobility or my TPIPTs supporting close air support." This applies to any other issue that you are trying to do.



CUSTOMER FOCUS IPTS

TEAM LINKAGE IS VITAL



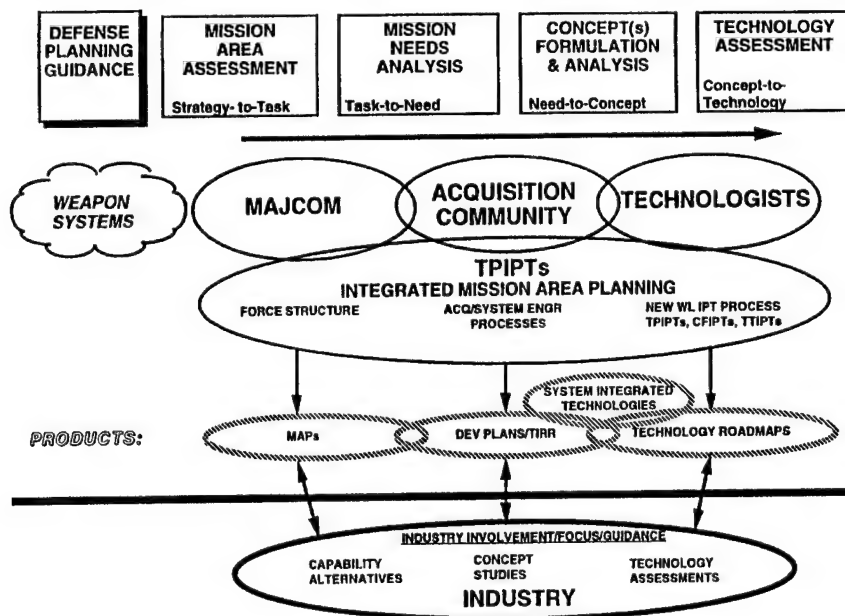
**"Aerospace Power:
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This allows us to structure the laboratory so we can clearly understand how we are going to approach our technology, and how we are going to get the leverage. We will make available to industry all of these documents. The Wright Lab is going to orchestrate this and at each one of these squares. We have a task that will be implemented to fill that square. Our approach is to have that effort done by industry. And only when industry is not interested in filling that square will we do that work in house. So, we are turning Wright Labs into a group of people who are going to orchestrate the technology necessary to support the evolution of our platforms for the Air Force. By doing that, industry can concentrate on those programs that they are particularly interested in, and they can see exactly where they fit. This will have the blessing of the entire Air Force because we will start with our user and work ourselves all the way through. It will be a disciplined process and it will allow us to ensure that we get the maximum utilization of our precious R&D dollars.

If we are going to get the benefit of this process, and if we are going to leverage our technology, we all three need to work together.



INTEGRATED TECHNOLOGY MASTER PROCESS: Global View



So, in summary, this one chart, although it looks complex, really is not. It is a straightforward process. It has the discipline necessary and it has all the players involved at the right point to generate a technology road map that will focus our technologies. These products, the maps, are due out in the summer. The development plans and the TIRRs are due out in late fall. The system integration technologies will be done between these and the technology road maps are going to be out in the March time frame to support our requirements to Congress for our technology investments.

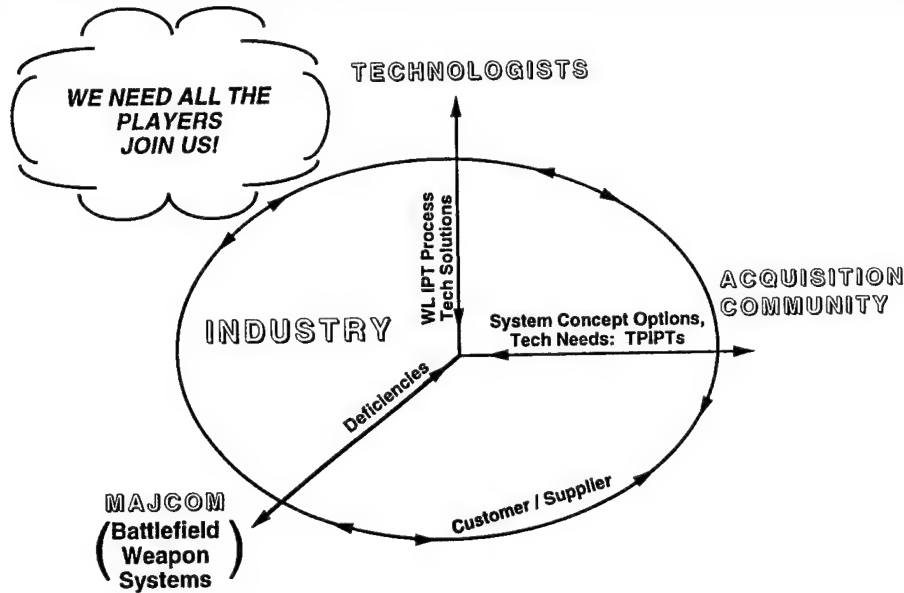
We believe this process will give us discipline and allow us to defend our technology dollars. Some of you are aware we have taken some severe hits in the last year or two. We have just started this process. We have not been through it once yet. We will and then we will continue to recycle this process.



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In summary, we in the Air Force think it is a good process. We think it will work if we can have your support in our process as we go through it. But it is extremely critical that we develop the capability to defend our R&D budget and that we get the optimum utilization of the dollars we have. Thank you very much. (Applause)

Question & Answer Session

"Technology Transition: From the Laboratory to the Battlefield"

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Lieutenant General James A. Fain, Jr.

GENERAL HATCH: *Thank you, Jim. As you can imagine the first question from the audience is "How can industry get a copy of your presentation, and will there be single points of contact for each TPIPT for interfacing with industry?"*

LT. GEN. FAIN: Yes. I will be delighted to provide a copy. We will leave one here with the AFA. Obviously I could not make 800 copies as we are a little short on funds these days, but I will leave a couple of copies for you. Each one of those TPIPTs has a phone number and a name identified who supports those particular TPIPTs. The Air Force is in the process of putting out a reg covering this entire process. The reg is in review and it should be out shortly. We will make all that available for you with the understanding that it is a draft reg and we are working on it.

GENERAL HATCH: *Thank you General Fain. A number of the other questions are a little more practical and programmatic. Since we have you captive, here we go. Dr. Perry [the Honorable William J. Perry, Secretary of Defense] and Mrs. Preston [the Honorable Colleen Preston, Deputy Under Secretary of Defense for Acquisition Reform] are pushing to reform the acquisition process to acquire defense products using commercial techniques. What is AFMC doing to support this initiative?*

LT. GEN. FAIN: AFMC supports the concept. The thing that is interesting is, as General Horner said, the devil is in the details. We believe that there is a lot we can do right within our own system if we will work together with the contractors. We were able to do a lot of things on the ATF program without changing a rule or a reg. We were able to make a much better approach at executing the

program. We believe we have those opportunities. So, while we have provided very significant input, I have briefed both people involved. General [Ronald W.] Yates and I have a concept of how to reform. We have shared that with them, but we really believe reform starts at the bottom with us and the contractor community. We need to clean up our own doorsteps before we go tell everybody else how to sweep theirs.

Acquisition reform is an interesting concept. We have been trying to do that for how many years? So, who thinks we need acquisition reform? Only those of us that are in it. If Congress wanted acquisition reform, they would have done it a long time ago. We have to start right here, right at home, and we have to work it together.

I am having President's Day where all the [corporate] presidents visit ASC. We mutually agree on the issues that industry is trying to work, and that we can agree with. We started off with some 48 issues and we got down to 44; four we could not agree with. But for the 44 we could, we are sending that package forward as a joint package, from ASC and through AFMC and through industry.

We want to reform acquisition, and I do believe that it needs to be done and I do believe we have a very short window. We are going to have to do it from the bottom up. I do not believe that waiting for someone on high to reform acquisition is the answer.

GENERAL HATCH: *Thank you, General Fain. The next question says, "Does the Air Force have plans to migrate this process to the JAST [Joint Advanced Strike Technology Program] program, and if so, how will the requirements be derived and passed down to develop technology road maps?"*

LT. GEN. FAIN: The JAST program is being developed based on this process. In fact, I was in the Pentagon today in a meeting with the JAST Program Office. I am on the Advisory Committee. They are preparing a briefing to give to industry in the next couple of weeks, and we were reviewing that briefing. You will see a lot of the same processes that you saw here.

JAST is going to be based on strategy-to-task. We are going to have to work an affordable solution, and in order to work that affordable solution we are going to have to go through this disciplined process that will allow us to make the tradeoffs up front and across the entire engagement area and at a weapons system detail. We are working very hard to bring the modeling and simulation necessary that will allow us to do that. We absolutely believe that modeling simulation is the key to allowing JAST to do what it needs to do.

When I took over the ATF, the Chief told me I had to deliver prototypes. I understood that. He told me I had to set the standard of acquisition excellence. I never understood that for a long time. JAST has to set a standard of acquisition excellence. This is our one chance to maintain our military industrial acquisition system. If JAST fails, we have lost it. So, it is very important that we all get behind JAST.

I think it is very important that industry gets behind it. I think it is very important that we start sharing all the information involving JAST and where we are trying to go. But, JAST has got to set the standard of how we acquire programs in the foreseeable future. We have got to do it affordably. So, you will see a lot of attention spent on processes and working the processes correctly and making sure that we have the underpinning from modeling and simulation that allows us to defend those requirements that we are going to evolve leading us to an eventual program to deliver hardware to the users.

GENERAL HATCH: *Thank you, Jim. A follow up question on JAST, and with your F-22 experience I think you are the right man to comment. When Secretary Aspin addressed the Air Force Association convention last September, he discussed this*

program. He described it as a joint program with the Navy, and perhaps aircraft that look different but are 70 percent common underneath the skin. Is that a definition of requirements that we can meet or is that the plan?

LT. GEN. FAIN: This is my personal opinion. I believe that on JAST we are going to have to look for a major technology breakthrough in order to make it affordable. What do I mean by that? I think we are going to have to look at the requirements that are unique to the Navy, and the requirements that are unique to the Air Force and figure out through technology how we can deliver an airplane that will allow us to fill those two sets of requirements in an efficient manner.

A concept that the labs are struggling with is modularity. How far can I drive modularity? If you look at Boeing, the way they build those commercial airplanes is they send them all down one assembly line. All those fuselages go down that same line no matter what airplane it is. They get tremendous economies by doing that.

How far can we take this concept? I do not know. I think we are going to have to look for those kinds of things that allow us to satisfy the unique requirements of the two different services but yet do it in one assembly line -- one very efficient way of operating. We are tasking the technologist to look at this. We have never come at it from that perspective before. We have always said we would build the airplane to the most restrictive requirement of either service, and everyone had to live with the results.

As an example, we have to figure out a way to run a wing down an assembly line where one wing has a movable leading edge and the other wing has a fixed leading edge. We have to figure out how we can build landing gear. What is more important, we have to figure out how I can do one structural analysis and have it apply to two different airplanes made out of two different modules. So, there are some very exciting things going on as we try to look at how to deal with this issue.

How will it turn out in the end? I do not know, but we must not define what commonality is today. I think that leads us into a

bickering process and we start fighting all over again rather than taking a very positive approach and saying, "How can I make this airplane efficiently and still satisfy these two sets of requirements that in some cases are always going to stay unique?"

GENERAL HATCH: *Thank you, Jim. This question addresses update programs. Of course we have heard a lot about how much we can afford in new systems and, if we cannot afford everything and new technology, we can work hard at upgrading what we have. How will the upgrade programs fit into your process?*

LT. GEN. FAIN: Remember when I had that chart up there and I said as the user develops his conceptual needs we are going to look at tactics; we are going to look at already ongoing weapons systems; we are going to look at C³I. That is the mod program. So, those mods will be incorporated as one of the concepts. In those development plans, we will have two or three concepts that have to do with today's capability; two or three concepts that represent various ranges of mods; two or three concepts that look at the current emerging technology; and maybe two or three concepts that look way out into future technologies. All that will get rolled into the development plan.

Because, like anything, it has uncertainty. Then as we try to structure ourselves back here on our technology road maps, we will try to make sure we can cover as many of those Xs as we can. We will cover them by looking through this process, being able to make sure that when we do it for mobility, it has application for fighters. That is the concept. We are trying to become more efficient. We are trying to cover as many of those concepts as we can. So, at any time we will be able to roll

out a concept, define it in terms of cost, capability, and in general what kind of schedule it will support, and make assessments as to how risky it is. Then we will have the technology to support that and we will have options we can give to the user. We really do need to give the users options as they try to struggle with the downsizing and reduction of dollars. So, it is a very definite player.

GENERAL HATCH: *Thank you, General Fain. A final question, one that pertains to management, what is your assessment as of today with the PEO [program executive officer] system and how well is it working?*

LT. GEN. FAIN: If I were to set out to design a management system to procure weapons systems, it would not be the one we have today. However, we have evolved and you cannot start over and wipe the slate clean. I think that the PEO system is going to work. We are going to make it work. It is like any other system; when you introduce it, there are people who are resistant to change. You have to work the interfaces. They have to be developed. They have to evolve over time. It is like most other management systems. What sounds very good in school or in text books starts to develop all kind of issues when you start to implement the devilish details. I am not sure that there is any system out there that's any better. No one has come up with any better way to answer the requirements that we address when we put the PEO system in. So, I think the PEO system is going to be part of us. I think we will make it work. I think that is our forte. I think we are working the interfaces very hard. We are having very open discussions, and I think it will turn out to be a very successful system.

GENERAL HATCH: *Thank you very much for being with us today, General Fain.*

"Regional Conflict Today: A European Perspective"

I'm delighted to be here this morning, happy to come back home to Orlando, to the Air Force Association Meeting. AFA is the leading advocate for air power in America today, and the men and women of United States Air Forces in Europe appreciate and recognize the quality of your work. I'm always impressed with the AFA's ability to focus on the critical issue of the moment, and 1994 is no exception.

The theme, *Aerospace Power: Regional Conflict in the 1990s*, is central to many of the issues that we have been focusing on and grappling with in Europe for the last three years. When the threat posed by the Warsaw Pact dissipated, we knew our force structure in Europe required adjustment to meet the challenges of the nineties. We knew the planes and the people and the bases fashioned over four decades to meet the requirements of the Cold War were no longer appropriate. Consequently, we've been drawing down and restructuring along with the rest of the Air Force. That's not news to any of you.

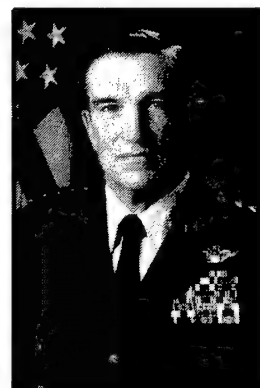
For a few minutes this morning, I would like to give you the European perspective on that draw down, and show how we're positioned to meet the future. We've been reducing forces, consolidating operations and returning bases to host nations at a breathtaking rate. When we began these reductions, we couldn't define with any precision future security requirements, let alone the force structure required to meet those requirements. At that time, precision wasn't required. When the Cold War ended, it was obvious to everyone that our requirements for forces overseas were shrinking. We were like a well conditioned boxer trained to fight another heavy weight. We needed to move down a few weight classes but retain our conditioning and training stan-

dards. And drop weight we have.

"Now the key to meeting these new threats will be flexibility with smaller multi-national forces capable of meeting every combat challenge. Thus the importance of NATO will increase and not diminish."

From 1990 to 1995, the forces of USAFE will be undergoing dramatic changes. In 1990, we had 636 fighter aircraft or almost nine fighter wing equivalents. We initiated a program that would send over 450 fighters back to the CONUS leaving us with 168 fighters or two and a third wing equivalents by the end of 1994. Consequently, we are reducing our base structure. We're going from 16 main operating bases down to six. Of course, we're also reducing our personnel. By 1995, almost 50,000 Air Force members will have returned to the states. We will drop from 83,000 to about 34,000 USAFE members.

These draw downs are obviously significant. But the question that we must continually ask ourselves is, "how will these reduced forces match up against the challenges of regional conflict in the 1990s and the threats imbedded in those conflicts?" As we've already noted, we and our allies in NATO no longer confront a mobilized Warsaw Pact; a threat that shaped our strategy for so many years. It's ironic that these changes in Europe have lifted the lid on the pressure cooker and unleashed the forces that today boil throughout Eastern Europe and beyond -- those forces of extreme nationalism, ethnic hate, religious animosity and political greed. The old threat



has been replaced by the new threats of instability and uncertainty.

The key to meeting these new threats will be flexibility with smaller multi-national forces capable of meeting every combat challenge. Thus, the importance of NATO will increase, not diminish. It's a credit to the Alliance that it has adapted so rapidly to this change in the threat environment. NATO has modified its strategy and it is fielding more mobile, flexible forces with a streamlined command structure. As a part of the NATO Alliance, the U.S. forces that remain in Europe, though sharply reduced, will retain credible combat capability and allow us to maintain our NATO leadership role. This is very important because of the advantage of having our forces based in Europe in partnership with NATO.

These advantages are worth discussing in light of the contributions in addressing today's topic of regional conflict. First, the Alliance is efficient. Each member nation shares in the common security, but the burden of generating that security is also spread among all the members. We don't normally think of NATO as efficient, but it certainly is. We benefit directly from the combat capability of the RAF, the Luftwaffe and all the other member nation air forces.

The Alliance is also efficient because combined operations offer great leverage. Allied aircraft flying in support of coalition objectives also serve to support U.S. national objectives. Coalition operations leverage our force contributions. We also leverage our resources when we share in the combined command structure, in intelligence and in surveillance assets. This leverage is greatly increased by NATO interoperability. Interoperability allows the Alliance partners to bring together their different weapons systems, but with common procedures, tactics and doctrine, to fight as an integrated force. Interoperability was a big plus in the Gulf [War] and is also paying big dividends in our current operations in Bosnia and in Northern Iraq. However, it's important to note that the interoperability that we enjoy today is not an accident. It is the product of years of living, working and exercising together.

"Coalition operations leverage our force contributions. We also leverage our resources when we share in the combined command structure, in intelligence and in surveillance assets. And this leverage is greatly increased by NATO interoperability."

Complementing this efficiency inherent in NATO is the influence in Europe that we enjoy as a leader in the Alliance. Europe remains vital to our national interests. As a leader in the Alliance, we wield great influence helping to shape European events. This leadership role and our influence is largely underwritten by our forward based forces. These forces clearly demonstrate our commitment to a free and stable Europe. Our forces in Europe offer another advantage which is critical to our success in addressing regional conflicts in the 1990s; that advantage is access. Forward basing in Europe gives us access to bases for airlift throughput as well as bases from which to conduct combat operations or peace keeping operations. It is this access that helps assure that Global Reach and Global Power remain credible in Europe, the Near East, Southwest Asia and Northern Africa. This access, plus forward basing, also allows us to get to the fight much quicker.

This efficiency, influence and access provided by our forward presence provides a great return on our investment. However, there are people suggesting that forward based forces are a luxury that we can no longer afford. They argue that it is preferable to meet contingency requirements solely from the U.S. Before we sign up for such a notion, we should take a look at the prospects for regional conflict. While threats of instability and uncertainty are difficult to quantify and predict, we do know something about regional conflict in the nineties. The obvious example which comes quickly to mind is Desert Storm. Desert Storm was one type of regional conflict for which we must always be prepared. Desert Storm was a large operation involving massive deployments of armor, personnel and supplies and demanded considerable through-

put through Europe. Additionally, the objectives of Desert Storm were reasonably clear and the operation was terminated when those objectives were met. I'm happy to report that USAFE remains postured, despite the draw down, to support this type of conflict as we were in 1990 and 1991.

However there's another type of regional conflict emerging in the nineties, and we will term that lesser regional conflicts or LRCs. The men and women of USAFE are engaged in these type of LRCs today. You know what they are. In Northern Iraq, Provide Comfort goes on. We are protecting thousands of Kurdish refugees from Saddam Hussein in the enforcement of United Nations no-fly sanctions. In Bosnia, as part of Provide Promise, we are delivering food, medicine and other supplies both by airdrop and airland to Sarajevo in the humanitarian relief portion of that operation. And, again in Bosnia, we are enforcing the UN resolutions for a no-fly zone as part of Deny Flight. It is in these lesser regional conflicts with missions of humanitarian relief, enforcement of UN resolutions, peace keeping, and the potential for peace making that we find the more likely military tasks for the remainder of this century I believe.

With that in mind, let me provide a brief sketch of each of these three lesser regional conflicts to give you a clear idea of what they require. In Provide Comfort, our planes have been patrolling the skies over Northern Iraq for nearly three years, our longest ongoing operation. During that time, U.S. aircraft have flown over 20,000 sorties or about two-thirds of the total. The rest of those sorties have come from the French, the Turks and the British air forces. Currently, we have over 70 U.S. aircraft deployed to Turkey, ranging from fighters and wild weasels, to tankers and airborne radar warning and electronic channelers. Our base in Incirlik, Turkey, has provided the in-place structure, and this structure has allowed us to sustain this operation as we rotate air crews and support aircraft in and out, primarily from within the theater.

Because of our efforts, the Kurdish refugees have been spared the human misery that existed when we started Provide Comfort. You remember the TV images. Three years

ago, hundreds of refugees were dying each day in the rugged mountains in Northern Iraq. Today that's no longer the case. They have come down off of the mountains and they are relatively safe, and we're proud to say we're saving lives. Provide Comfort has been a great success. But it has been a long operation, and the end is not in sight. From the start, contingency forces for this type of LRC must be sized for economy of effort. They must be able to stay as long as required.

"Lesser regional conflicts demand a different mindset and a different force structure and a different command and control structure, a mindset that provides great flexibility."

In Provide Promise, our crews are also saving lives through airlift. To date, U.S. and allied aircraft have delivered over 85,000 tons of cargo into Sarajevo and dropped over 11,000 tons of food and supplies to those in the countryside throughout Bosnia-Herzegovina. Provide Promise is now the longest sustained humanitarian airlift in the history of the United States Air Force, surpassing the Berlin Airlift by four months. We've had some welcome relief from Guard and Reserve units who augment our daily airlift and airland operations, and that's been greatly appreciated.

While the U.S. contribution to Provide Promise is significant, we actually represent less than half of the total sorties flown in this multi-national operation. In fact, there are 20 countries involved, and that's what we mean by leverage. Through this joint effort, we have kept thousands of people alive during the harsh winters in the former Yugoslavia. The airdrops allow us to feed citizens where U.S. convoys are unable to break the Serbian road blocks. The airland relief missions into Sarajevo are keeping that besieged city alive.

Our third example of an ongoing lesser regional conflict is Deny Flight where our aircraft are helping to enforce the no-fly zone. We've been operating tankers, fighters, reconnaissance and close air support aircraft primarily out of Aviano Air Base in Italy.

There we've been supporting that operation and we've also been supporting operations from U.S. Navy aircraft carriers in the Adriatic Sea. So far, the U.S. has flown over 8,000 sorties, but it's in this operation that the concept of leverage is best illustrated. Though we provide the leadership for that overall operation, U.S. aircraft are flying only about 30 percent of the fighter sorties. The other 70 percent are being flown by Dutch, French, British and Turkish air forces. Deny Flight is also a success.

Deny Flight has meant that the Serbian Air Force has not been a factor in the course of that struggle. For the NATO ultimatum regarding the artillery pieces around Sarajevo, it will be these same forces, these same multinational forces, that will enforce NATO and United Nations decisions.

So you can see when we talk about regional conflicts in the nineties, especially lesser regional conflicts, we don't have to spend a lot of time speculating about what they might entail or require. What we've got going on right now in Provide Comfort, Provide Promise and Deny Flight provides many of these answers. First, lesser regional conflicts demand a different mindset and a different force structure and a different command and control structure, a mindset that provides great flexibility.

We've also learned that, unlike Desert Storm, the objectives of these lesser regional conflicts may not provide clear milestones for completion. At what point do you stop a peace keeping mission in an area which has been torn by ethnic strife for hundreds of years? When do you stop supplying humanitarian relief to a people while they're still suffering? At what point do you stop enforcing United Nations resolutions regarding belligerent parties when there's no clear road to peace?

The difficulty of answering these questions means that these conflicts are not likely to be resolved quickly or easily, and so, we must be committed to stay the course. The uncertain duration of these conflicts has implications for our reserve component. The National Guard and the Reserves have provided welcome relief in all three of these conflicts. But absent mobilization, they are not structured for unit-size, sustained opera-

tions nor for bare-based employments, and it's assumed and required that much of the support for their deployment and employment will be provided by active forces at the receiving locations. That's what we mean by Total Force.

Also our experiences in Provide Comfort, Provide Promise and Deny Flight, as well as those in Desert Storm, indicate that we are likely to fight future regional conflicts as part of multi-national forces. Employing multi-national forces recognizes the shared responsibility for regional security, and it also offers a politically acceptable way to share that burden, both the economic burden and the political burden. Consequently the ability to operate efficiently and effectively with our allies will continue to be a military imperative for the 1990s and beyond.

From our ongoing experiences, we also have an idea of what these lesser regional conflicts require in terms of air power. An LCR may be lesser conflict, but they have the same basic requirements for complete mission packages as do larger conflicts. Small doesn't mean easy. We need fighters with night and all weather capability. We need tankers, usually more than we thought. We need airlift and humanitarian resupply as well as the movement of supplies to our own forces. We need all of the capabilities to support these forces across the spectrum of conflict - electronic combat, reconnaissance and special forces. We also need bases from which to fly all of these sorties that support these operations. We have these bases today in places like Rhein-Main [Germany], Aviano and Incirlik.

What if we didn't have bases in Europe and the USAFE people that run these bases? Is forward basing really a luxury? If we were to conduct these lesser regional conflicts from the United States on a pure rotational basis, as some have suggested, what would it cost? To answer this last question, we conducted a comparative analysis using real world data from our operations in Bosnia-Herzegovina as a basis. Using a 90-day rotation rate with very conservative costing concepts, it turns out that deploying Air Force personnel and equipment from within Europe for a Bosnia-sized operation saves about \$55 million a year

when compared to rotation from the east coast of the United States. The cost avoidance is even higher, \$90 million a year, if we consider an operation from a main operating base with permanently assigned forces like Rhein-Main.

The bottom line is that our forces in USAFE are not a luxury. They offer the most economical way to meet the needs of the conflicts that are ongoing right now. And you may detect that I am a strong advocate for forward presence and for NATO involvement. A stable free Europe continues to be vital to our national interests. We know from experience it's far cheaper in terms of lives, human misery and dollars to preserve peace than it is to make peace once it is lost. We've learned that lesson three times in this century in Europe. During World War I, World War II, and the Berlin Blockade, we fought our way into Europe as we paid the price for not being involved in the on-scene political process.

As we survey the international landscape today, the threats to peace are less predictable and certainly tougher to plan for than in the days of the Cold War. Nevertheless, we know something about regional conflicts in the nine-

ties. We're engaged in them right now. We have been engaged in them for nearly three years in providing relief and security and hope to people under stress. From our experience, we know what these lesser regional conflicts of humanitarian relief, enforcement of resolutions and peace keeping require in the way of air power. They require flexibility, both in forces and in command and control. These are required to allow us to operate in coordination with NATO, the United Nations or unilaterally. They require real combat capability. We have that flexibility and that combat capability today in Europe where our forces benefit from the unique advantages in Alliance security and forward presence.

The men and women of the United States Air Forces in Europe, together with our NATO allies, are currently meeting these challenges of European regional conflicts, and we will continue to be the best guarantor of European regional security for the future. I thank you for your interest, for the opportunity to come and be with you this morning. We appreciate your support of your forces in Europe. I would be happy to address questions that you might have. (Applause.)

General Robert C. Oaks

GENERAL HATCH: *Thank you very much General Oaks. There are a number of questions about Bosnia. This morning's paper discusses a Sunday deadline for the Serbs to remove all armor from within 12 miles of Sarajevo or suffer the consequences, which in this case are air strikes. If those air strikes do come to pass, could you tell our audience how will that operation unfold? Who is in charge and how will it be carried out?*

GENERAL OAKS: It's an interesting command and control operation. In Bosnia-Herzegovina, it will be the first time that NATO has ever worked for the United Nations. With NATO, the chain of command is through SACEUR, down to AFSOUTH, Allied Forces Southern Europe, with its headquarters in Naples. Admiral Mike [Jeremy M.] Boorda, United States Navy, is the commander there. Then, through Allied Air Forces Southern Europe, U.S. Air Force General Joe Ashy [Lt. Gen. Joseph W. Ashy], the chain of command moves up to 5th ATAF [Allied Tactical Air Force] at Vicenza [Italy] where we have an Italian three-star who is the commander. At 5th ATAF, he has working for him as his CAOC commander, a Combined Air Operations Center, Air Force Lieutenant General "Bear" [James E.] Chambers. He is running the CAOC.

The CAOC is at the center of running that war. General Chambers is running the airlift out of Rhein-Main, all of the aircraft out of Aviano and all of the other bases in Italy where we have the Dutch, French and Turks, and the other forces involved in flying the support missions that have been ongoing throughout Provide Promise. It is managed with a single air tasking order. What you really want to know is "how is the CAOC

and all the people involved going to conduct the strikes, if they're required?" It's analogous to the Gulf War. If it happens, we've had a long work-up period for this operation. We've had forces flying in a variety of missions over Bosnia-Herzegovina, and so they know the area. They know the challenges; they know the weather patterns; and they know what the targets look like. All the pilots involved will have seen all the target areas. We have identified target areas in a 20 kilometer radius around Sarajevo. As you know, the Serbs have been told -- not just the Serbs but all warring parties -- to get their artillery pieces and their mortars out of there, or turn them over to United Nations control. That is happening.

Is it going to happen by midnight on Sunday? I don't know, nobody knows the answer to that question. If they're not turned over or withdrawn, we are generally able to determine whether or not the sites are occupied. There are some 300 weapons that need to be turned over. That's a guess; there could be more. We know those sites, and where they've kept those weapons in the past.

Obviously, they move them around, so reconnaissance and intelligence are critical to this operation. We have great intelligence and great reconnaissance, but it's not perfect. For the past two weeks, we have had bad weather over the area, so we haven't had good photography. We're relying on French and British tactical reconnaissance, our national means, plus we're flying U-2s over the area whenever we can. We're getting the best possible intelligence. When you interject those things that we've lived with over the years -- bad weather and types of camouflage -- we still have some limitations in our reconnaissance. We feel we have a very good

database and know where the sites are located and have a good capability to determine whether or not sites are occupied.

Do we have a good capability to hit occupied sites that haven't been turned over? Based on our experience with the Gulf War, we have an answer. We have A-10s, and we have AC-130s and F-15Es that provide night capability. We have F-16s with GPS [global positioning system] on board and we have allied aircraft with similar capabilities, although the night capability is basically ours. We have a great capability to identify sites, determine whether they're occupied and then to attack them. With precision munitions, as well as the A-10 and the AC-130, we're confident that we have the capability to hit the sites if they're occupied and if they're not turned over.

We face a key question: "Are the Serbs and Muslims committed to turning over the weapons so we can place them under control?" This is not an edict to the Serbs only. It's an edict for all the warring parties to turn over their artillery within the circle. Sunday night is a critical point for all of us and we're watching it very closely.

GENERAL HATCH: *Bob, that's the best description I've heard. Thank you for that answer. There's one follow-up question about the coordination process with the UN forces on the ground and the UN leadership.*

GENERAL OAKS: There are several facets to this answer, and it ranges from very good to not so good. Let me first talk about the very good. There are some 17,000 peace keeping troops in Bosnia-Herzegovina today. I think there's about 24,000 in the total former Yugoslavia. When we started Deny Flight, all of the member nations were very concerned that if we shot down an aircraft from one of the warring parties or belligerents, retaliation would be taken out on the peace keeping forces. They are peace keeping forces; they are not prepared to wage war. They don't have heavy armor, and they are not adequately armed to conduct war.

There was immediate concern about protecting those peace keepers, and they said we need air cover and we need close air support to protect our people on the ground. So we dedicated ourselves to provide that. We don't

have U.S. troops on the ground, and to provide close air support you have to have a forward air control capability.

We brought troops from the peace keepers to Sembach in Germany, and we trained them as forward air controllers. Using our standards, we trained them on our communications and our terms. They went back to Bosnia-Herzegovina as trained forward air controllers. For the past six months, on a daily basis, we have been operating with those new forward air controllers. We fly down, make the communication link-up, they identify targets, mock targets and talk us in. Using normal close air support procedures, they will say, "see that barn on that hill" and they will talk you in for a run. So we have a capability, and the coordination is superb, absolutely superb. I flew one of those missions in the back seat of a Marine F-18 and was very impressed with the ability of these new forward air controllers to coordinate strikes, if they are required. I'm confident that the people on the ground also feel comfortable with the coordination.

I probably over simplified the command and control structure in my first answer, because there are some areas that it isn't quite so tight. Right now in Bosnia-Herzegovina proper, there is a United Nations Commander, General Cott, a Frenchman, who considers it his military area of responsibility. So on Monday morning, if in fact strikes are required, there is not total agreement about who determines the targeting and who clears in the strikes. That's being worked out. They are meeting today, in a closed and I suspect a tense meeting, to determine exactly who has the trigger, and how it's going to be executed. The rules of engagement have been a constant challenge throughout this operation.

Based on our NATO history, the parties involved are all there with good intent and want to solve the problem. They are friends, and they are people with whom we've worked on a continuous basis. At those meetings, there is a firm foundation for arriving at solutions, and as it has proved true in the past, I'm confident that it will prove true on this critical and very challenging Monday morning.

GENERAL HATCH: *Thank you General Oaks. There is a question about rota-*

tional training. You spoke of returning 50,000 airmen from overseas in the next few years. In planning for future operations, how will you rotate CONUS elements forward for training?

GENERAL OAKS: We have a good 40-year history of that training. We had dual-based forces in the United States and brought them over to Europe on a regular basis. Every year a flow of Guard and Reserve fighter and airlift units comes over and participates in exercises. We anticipate that rotational training will continue, obviously not on the scale that has happened in the past, but we plan for those same kind of rotational deployments. We're confident that it will be as effective in the future as it has been in the past.

GENERAL HATCH: Bob, will you plan to use conventionally capable bombers in that rotational training?

GENERAL OAKS: That's happening today on a regular basis. Mike [General Loh] is sending ACC forces over to Europe, both bombers, B-52s and the B-1s. We will be anxious for the B-2 to make the trip also. They fly a variety of different profiles. In some cases, they fly over and back in a single sortie. In others, they will fly over, hit a target on a practice range, participate in an exercise, land, and maybe fly another sortie or two before returning to the U.S. We're doing that today and we certainly expect that to continue.

GENERAL HATCH: The next question concerns the Partnership for Peace and our Eastern European counterparts. What kind of interservice contacts do you have these days and what kind of exercises do you see in the future?

GENERAL OAKS: I appreciate that question. In fact, I should have sent it in myself. Partnership for Peace is a dramatically underestimated program. NATO has adopted it. The U.S., through EUCOM, has already been participating in the essentials of Partnership for Peace, although we didn't call it that. Last year USAFE participated in 65 various visits to Eastern European and former Soviet Union republics and countries. We will double that this year. The U.S. Army has a greater number. So, those contacts are ongoing and they're not just senior officer visits; they're majors and senior enlisted -- all

ranks. They're not just exchanges that sit around and eat and enjoy companionship. They're meetings with objectives. We have a list of probably 20 different areas in which we are providing assistance. For example, we've had a chaplain, a USAFE chaplain, in Hungary for the past year. Now you say, "so what?" It's interesting if you think about the Hungarian situation, that over the past 45 years, they imposed atheism on the country and their chaplaincy disappeared. The Hungarians said, "We need a chaplain, how do you do it? They were starting from ground zero as they built a chaplaincy. We have been at the forefront of putting that together for them."

Across the board -- personnel management, safety, and virtually every aspect of building an Air Force along efficient, effective lines -- we have had people over there talking about how to do it. We have not had tactical discussions or warfare improvement discussions. We've focused on administrative things, but it's been the basis for opening up a dialogue, building friendships, building confidence, and changing mindsets.

Let me tell you about one incident that best reflects this cooperation. We had some Bulgarians, senior enlisted and junior officers, come to Ramstein [AB, Germany] for a few days. At the conclusion of the visit as they were going out to get on their airplane, one of the young officers said to our escort, "We will never forgive the Russians for teaching us that you were the enemy." That's what's happening on a daily basis. That's what's happening in all of these exchanges. For me, that's the object of Partners for Peace, to build those kind of relationships and to break down that wall. One wall, the Berlin Wall, came down, but there are still a lot of feelings that were built up over 45 years of propaganda. That wall has to come down, and that doesn't happen overnight. We're working hard on it. That's the object of Partners for Peace.

Let me talk about another aspect of Partners for Peace. What has been the strength of NATO? The strength of NATO has been the Article V Common Security Bond, the obligation that if one nation were attacked, all would respond. That's the security insurance that Eastern Europeans want, and it's obvious why they would want that. They feel vulner-

able. Turn to the history books, and you understand why they feel vulnerable. They want to get under our security umbrella as rapidly as possible, the sure umbrella of Article V. For a variety of reasons, and obvious reasons, NATO is not ready to commit to that. For one thing, those Eastern European forces aren't ready to be integrated into NATO forces.

In the past, the heart of NATO capability and effectiveness has been that interoperability based on common doctrine, common tactical procedures, and common concepts of operation. That doesn't exist today for these forces. It wouldn't make sense to immediately fold those forces into NATO, because all you're doing is giving something without something offered in return. But, through Partners for Peace, you develop a cooperative attitude; you develop an interface; you move toward common exercises and those Eastern European countries are now working with NATO on a regular basis.

Now what does that lead to? Well, it leads to an associate membership. Five years from now, after five years of Partners for Peace operation, people are not going to look at the associate members and say, since they're not members of NATO, we can go ahead and attack them. There's going to be an ambiguity, not quite as clear as Article V kind of commitments, but there's going to be an attitude that these people are a lot like a NATO member. They've been exercising and working with NATO. They have common procedures and common doctrine. This is a real step forward in stabilizing Europe and building the attitude that we want. Our primary goal is to establish an attitude in Europe, and really throughout the world, that doesn't tolerate a violation of a nation's border. That's why we went to Kuwait and fought the Gulf War, and there are many other incidences of that in our history. We want to expand that attitude as much as we can within the conditions that exist at the time.

I think Partners for Peace is a great opportunity to step forward in breaking down those barriers that have been built up by years of propaganda. It lets them understand that

Americans and Western Europeans are good people who never designed to wage an offensive war on the former Warsaw Pact.

GENERAL HATCH: *A final question for General Oaks. There are many people in our audience who are interested in foreign military sales and you're talking about Partnership for Peace, do you see new opportunities in the years ahead?*

GENERAL OAKS: We have found great bonding comes through common equipment and the F-16 is a great example. For years, we talked about rationalization, standardization, and interoperability, and we worked at it on the margins. The greatest thing we ever did for rationalization, standardization, and interoperability was when we built F-16s together, and used them together. Today, we are very close to those air forces that use our aircraft. There are other examples, but the F-16 is the one that comes to mind.

You expand that kind of opportunity. What's it based on? It's not based on us selling. It's based on us building great pieces of equipment, great weapon systems, and people want them. What are Eastern Europeans faced with today? They're faced with a miserable aircraft by and large, and they look at what they have and they say, "we've got to modernize. If we're going to have an air force, we've got to get new aircraft." They're faced with very cheap MIG-29s, nearly free in some cases. Do they want them? They don't want anything to do with them. Why? Because they don't have confidence in support as well as some operational capabilities. They want the support structure, the support confidence, and the tradition that we have through building good systems and then supporting them. They will pay the price because of that factor.

So is there opportunity? Certainly, if I were in that business, I would approach it as significant opportunity.

GENERAL HATCH: *Thank you Bob and thank you for being with us today.*

Air and Space Power: A Growth Business

A change is brewing in Washington. There is a growing realization that air and space power holds the title on our ability to fight abroad. Let me spend the next few minutes discussing what the Air Force is doing today and why I believe air and space power is a good bet for the future -- a real growth business.

First, even though someone described the collapse of the Soviet Empire as "the end of history," the Air Force certainly has not throttled back. In Northern and Southern Iraq, we've flown over 175,000 sorties since Desert Storm, twice as many as we flew in Desert Storm. In Somalia, we've delivered 83,000 tons of supplies in 6,000 missions. In Bosnia, 4,600 airlift and airdrop sorties have delivered 51,300 tons of food, fuel, medicine. We've flown over 3,900 air control sorties enforcing the no-fly zone. We've got hundreds of Air Force people stuck in exotic spots -- like Andean mountain tops or in the Amazon Basin -- supporting the drug war. We have about 50 satellites on-orbit and we're launching at the rate of just over one new satellite per month.

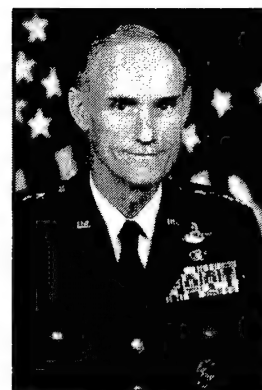
As you can see, we remain very active, very involved. This is because the medium of air and space now offers the most attractive and the most varied military options for achieving U.S. objectives overseas. People have come to understand, first of all, that you can engage in military operations solely through this vast vertical dimension of air and space. I smile to myself occasionally when I listen to talking heads debate "whether" we should engage in Bosnia. Our airlift there has now passed in duration the famous Berlin Airlift, becoming the longest running humanitarian air effort ever. We've been engaged for 19 months, more-or-less painlessly, as such things

are judged. More than 25 percent of our air missions to date in Somalia were flown before we committed ground forces. So, the nation has found that it can and often does act through air and space when other, more traditional forms of military engagement seem unattractive.

Second, it is now common knowledge that we must control air and space in order for other military operations to succeed. Again, all of us have understood this all along. But I now believe that it has been driven home to everyone who's paid attention. Decision makers focus on runways and orbital mechanics at the outset because air and space constitutes our first priority. In every national security crisis, whether you're a military leader formulating options or a civilian decision maker, the same questions get asked: Do we have reconnaissance coverage? Where are the air bases we will use? Do we have enough lift and refueling?

"...the medium of air and space now offers the most attractive and the most varied military options for achieving U.S. objectives overseas."

Third, we know we will almost always need rapidly responding forces. The Bottom-Up Review confirmed that quick response is essential in a major regional conflict. The longer we wait, the more territory the opposition takes, the more difficult he'll be to dislodge. If we're slow to intervene, victory may still come, but at a much higher price. Moreover, quick response is even more important if we have to switch forces from one conflict to



**"Aerospace Power:
Regional Conflict
in the 1990s"**

another, near simultaneous contingency, as is our stated national requirement.

Who can provide this quick response? Well, in every conflict of our era, the only way we've found to take the war to the other side early is through the air. Berlin, Tokyo, Pyongyang, Hanoi, Baghdad -- the first, sometimes the only, direct attack on the enemy homeland occurred by air.

In addition to quick response, having the ability to operate underneath an air and space sanctuary is a priceless advantage. It's been more than 40 years since a U.S. soldier was attacked by hostile aircraft. Air and space superiority produced and protected our ability to carry off the big left hook into Iraq. In short, the air and space power is the currency backing our global involvement, our potential for maneuver on the world stage.

Now, so far we've talked about what happens after shots are fired. Air and space power also contributes to preventing regional conflict. As you know, forward presence is one way military forces deter aggression as well as promote U.S. interests, access, and influence in other countries. As I see it, air and space power offers our nation a new form of peacetime presence.

While we expect to maintain a significant, if greatly reduced, commitment in Europe and the Pacific, this has always been an expensive and often heavy-handed approach to providing presence. Until recently, stationing troops forward was the best, maybe even the only way to monitor events, to show the flag, to guarantee a rapid response. Air and space power now promises a more elegant solution to the presence requirement. As the U.S. brings forces home, space-based platforms obviously provide an alternative way to continuously monitor world events. This is a kind of global presence.

Or, look at it this way: Aerial refueling gives the Air Force global reach -- and that, too, equates to global presence. Twelve hours before kicking off the Desert Storm air campaign, seven B-52Gs from the 2nd Bomb

Wing at Barksdale Air Force Base, Louisiana, took off for Iraq carrying conventional air-launched cruise missiles. As part of the initial air assault, these bombers hit facilities deep inside Iraq. The round-trip required four aerial refuelings and took more than 35 hours, the longest air combat mission in history and the first time we used conventional ALCMs.

"Until recently, stationing troops forward was the best, maybe even the only way to monitor events, to show the flag, to guarantee a rapid response. Air and space power now promises a more elegant solution to the presence requirement."

This shows that, while the 2nd Bomb Wing is present at Barksdale, it is also present 20 hours later at any spot on the globe -- and everybody now knows it. So, if you're sitting in Country "X" and you're holding a council of war, you've got to think about the 2nd Bomb Wing at Barksdale -- or the 509th Bomb Wing with its B-2s at Whiteman in Missouri -- as being less than a day away. That is presence. It's a new definition of presence made possible by the rapid deployment feature of air and space forces.

But the main point is that we're moving away from a period characterized by forward stationing of forces overseas to an era of stateside basing with combat forces configured in an expeditionary mode. Air and space power makes it possible for the U.S. to progress towards this concept without at the same time abandoning the idea of "presence."

So, as you can see, the Air Force remains engaged and active despite the drawdown, despite the end of the cold war. Because air and space forces exert a global presence, I believe we're going to get more of the 911 calls.

Question & Answer Session

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A Growth Business

General Merrill A. McPeak

GENERAL HATCH: *Please comment on the projected balance of land based and sea based air power as you see it. I guess that's a derivative question from the Bottom-Up Review.*

GENERAL MCPEAK: I don't think the Bottom-Up Review focused on the roles and missions aspect of that question. It did apportion force structure so it was a de facto decision about the fraction of this nation's air power, tactical air power, which will be water borne and the fraction which will not be water borne. That is an important national issue and one which I think may come back in the coming roles and missions debate.

As you know, Congress has directed that the Secretary of Defense appoint a roles and missions commission. SECDEF has to do that shortly, and that commission has a charter to make a one year study and report back on this issue. That's not the only roles and missions question, but certainly the question of what fraction of our tactical air should be put at sea is the important roles and missions question in that particular section of military power. No one will deny that we should have some part of our tactical air force capable of launching from sea-borne bases. And it's absolutely invaluable that we have that kind of capability. It's more expensive to do TACAIR power application that way, but it's worth it for those contingencies where bases are not immediately available, or if for some other reason we're blocked from using bases for a while at the outset.

But the real question is how much can we afford? How much of our total TACAIR capability can we afford to configure this way? I don't have a handy answer. I don't think you can work it out on your fingers or divide that out in your head. I'm a little bit

concerned that the Air Force tactical fighter force has been cut roughly in half since 1988, down to 20 wings including the Guard and Reserve. So we really have only 13 active wings of TACAIR -- this is too small a fraction of the nation's total tactical air power to be configured in this form. But we will have to work out what is the right number and I consider that one of the high priority items over the next year.

GENERAL HATCH: *Thank you Chief. You mentioned the new Roles and Mission Study. Secretary Aspin was in the process of appointing people to that study group when he left office. Has Dr. Perry [the Honorable William J. Perry, Secretary of Defense] picked that up? Are you aware of any of the senior leaders who will be involved in that, what kind of schedule it's on now?*

GENERAL MCPEAK: I'm not aware that Dr. Perry has made any decisions in that regard. He must do so relatively quickly. I would expect him to announce the names of the commission in the next week or 10 days.

GENERAL HATCH: *Thank you General McPeak. Another question on readiness. You've testified to the Congress about the importance of funding for readiness. Do you think you have the balance of funding properly arrayed to cover your readiness needs in the years ahead?*

GENERAL MCPEAK: I'm reasonably confident that we're in good shape. Readiness is always not as good as you would like it to be, because we would like to have 100 percent of our equipment operational; 100 percent of our crews trained; and 100 percent of the spare parts we need in the warehouse. It's natural that we should want that condition. We are not in that condition today. And as a matter of fact, at the margins, the trends

are slightly down from readiness highs we established in the early nineties. But it's still good enough in my opinion to properly carry out any task the President may ask us to do.

It is because we have cut force structure very rapidly. I mean, I'm not happy about this, I'm not bragging about it, but I believe that the Air Force has cut force structure much faster than the other services. For instance when confronted with the same problem, we realized there are essentially three pots of money that we have to deal with. One is a readiness pot, a second one is force structure and third is modernization — which is a way of thinking about future readiness.

We cut modernization to the bone. We cut it by almost 50 percent from the high in the mid-eighties when we had a lot of Cold War programs -- a small ICBM, rail garrison, ACM and so on -- you remember all those programs. Those were cut quickly when the downturn started and as a consequence, our total investment pot is down about 50 percent in real terms from what it was in the mid-eighties, and in my opinion cannot be cut further.

Essentially, the modernization programs that remain in the Air Force budget are all very high priority and we must bunch our muscles and keep them going. Modernization was pared back first, about as much as we could. Force structure has been all we could trade off against our readiness concern. The Air Force has voted its convictions in this case. We have let force structure go rather than try to maintain it and watch its readiness deteriorate. And by the way, if I have anything to say about it, we will continue to do so. We will continue to insist that whatever size Air Force we have, it is ready to fight and it has the proper modernization programs in place to keep it ready to fight for our successors. In my opinion, that's more important than force structure.

So when confronted with those choices, we have traded off force structure, perhaps to a greater degree than the other services, and therefore, I am reasonably confident that we're ready to do just about anything that you could reasonably ask us to do. And we'll stay that way for the near term. Beyond the mid-nineties into the late nineties, readiness can evaporate awfully fast on you. So this is

something you have to watch all the time and it's a reason why the Secretary and I are focusing on it.

And some very unusual things contribute to readiness. In my opinion, housing does. Go look at base housing if you want to tell whether the wing is ready to fight or not. We have to keep good people. The key to readiness is having good people in the outfit. And by the way, keeping good people means you have to be serious about readiness. The minute our people believe that we're not serious about what we do for a living, they will walk immediately. The good ones will walk. Some will stay. We will lose our good people the minute we show that we're not concerned about readiness. So for me, the people aspects are probably of overriding importance when you consider the issue of readiness. And so I look at what we're doing in the pay account, what we're doing for people and so on as readiness concerns.

GENERAL HATCH: *Thank you Chief. In that regard a follow-up question did ask about pay, COLAs, health care, and I think you've answered that on behalf of all Air Force personnel. You've spoken on cuts in forces, cuts in personnel and we know we have excess infrastructure. Would you address how you're going to approach that issue in the years ahead?*

GENERAL MCPEAK: Well, I think we do have excess infrastructure, but in a sense it's hard to blame the Air Force for this. Look what we have done over the years. If you talk about bases for instance, the Air Force entered World War II with about 30 main operating bases -- the old Army Air Corps. It built about 100 bases in World War II. When we were stood up as an independent outfit [1947], we had about 130 air bases in the United States. In the last 50 years, we've closed about one base a year net. We've still got too many, and we're still closing World War II air bases. The bases we nominated for closure during the '93 round at BRAC [base realignment and closure commission] were Griffiss [Air Force Base, N.Y.], McGuire [AFB, N.J.] Homestead [AFB, Fla.]. These are bases built in the early forties, every one of them. Another, K.I. Sawyer [AFB, Mich.], may not be. It might be a Cold War base,

because in the early fifties we built a band of bases across the Northern United States. K.I. might have been one of them, I don't recall. Minot [AFB, N.D.] and others are where we put the bombers so that they were closer to their cross polar routes.

Bases built since the end of World War II were mostly in connection with the fielding of the strategic force -- the missiles and the bombers and the space force -- Vandenberg [AFB, Calif.] and Kennedy [Space Center, Fla.]. We froze base closures during Vietnam, which was an 11 year period. We virtually didn't close anything. So if you set aside the building we've done and the closure during that very long Vietnam period, we have closed on balance one base per year. We're down to about 80 main operating bases. Now that's still too many. When the Air Corps had 130 bases, it had 2.1 million people. We have 80 bases and we will soon go below 400,000 and I'm talking about uniformed personnel. So we still have way too many bases per person. I mean it's just an objective view of infrastructure. And therefore, we will have to close some more bases in the '95 round of cuts.

But my point is we haven't simply stiff armed this problem. We have worked away at it conscientiously. We took half a dozen bases in '91 and we took another half dozen in '93. We have not allowed ourselves to drive up to the edge of the cliff and then fall off and close 50 bases or something like that. The reason I make this pitch is because I hear some

talk like that in Washington. Some say okay, this is our last cut at this business, the law goes away after '95, so we must close an enormous number of installations. My opinion is the Air Force has dealt with this problem in a very positive, a very proactive, a constructive way over time. We didn't just get religion about this yesterday, and as a consequence, we're in pretty good shape. We can take another bite out of it, but we don't need to have a train wreck in the '95 BRAC round.

GENERAL HATCH: *Thank you General McPeak. A final question, one that you've fielded many times, talks about additional F-15E procurement.*

GENERAL MCPEAK: I just had the pleasure of reintroducing [Lt.] Jeannie Flynn to the nation yesterday. She completed her training out at Luke [AFB, Ariz.] in the F-15E. I like Jeannie Flynn. She didn't ask for anything from anybody. Nobody gave her anything, and she went right through that course just like everybody else. Everybody in the squadron had very high respect for her. And in her opinion, the F-15E is the world's greatest airplane. It's also my opinion. (Applause.)

But you cannot cut the Defense Budget without cutting the defense budget.

GENERAL HATCH: *Thank you very much General McPeak. It's a pleasure to have you here. We appreciate all that you do every day for everyone of us and for everyone in this nation.*

"Air Power, the Air Mobility Dimension."

The Chief [General Merrill A. McPeak] referred to all of the MAJCOM [major command] commanders as describing their corner of the world to you, and I appreciate having the opportunity to come and describe my corner. I've elected to call my remarks today, *Air Power, the Air Mobility Dimension*. I would tell you that by its very nature the name of this particular symposium, *Aerospace Power: Regional Conflicts in the 1990s*, has led to a focus on bombs, bullets, composite wings and in general the air combat aspects of our business. We must pay attention to those things, but at the same time, I think it's important that we take a few minutes and we look at some of the basics of our aerospace power and doctrine. I would like to look at what some people have started to call the non-lethal dimensions of air power.

Each speaker throughout yesterday and today has alluded to the pace of change and the almost daily shifts in regional balances of power. After decades of a super power stand-off that generally drew pretty clear lines around the world between the communists and the free world, our national leadership is still trying to adjust to this new environment. And in this kind of world, I think it's important to review our framework for understanding the various dimensions through which we can apply military power to confront international instabilities.

We're all generally familiar with the traditional concept of using our air mobility forces, our tanker and airlift forces, as force enhancers. A force enhancer by its definition enables and improves the operation of aerospace and surface forces. We need strong, agile and lethal combat ready forces to respond quickly to worldwide threats, but we also need sufficient strategic and theater air

mobility forces to be available to move and sustain these combat forces. Air mobility is crucial to the enhancement of combat power.

"As our force structure goes down, the concept of Global Reach assumes more and more importance."

When President Bush outlined our country's changing national security strategy and defense philosophy in August of 1990, strategic mobility was recognized as the cornerstone. In the ensuing three and a half years, including a change in administration, that focus has not changed. Our strategy relies on our ability to move our people and equipment on time to where they need to go. Within the Air Force, that translates to the global reach portion of Global Reach -- Global Power. The strategy will not succeed with a defense transportation system that cannot answer to the task. The best military force in the world is worthless if it can't get to the fight or if it doesn't arrive when needed.

The current administration's recognition of this fact is demonstrated in a 7 February news release from the Office of the Secretary of Defense, pertaining to the subject of the FY95 Defense Budget. Under the heading of *Protecting Readiness and Quality of Forces*, the first priority is strategic mobility followed by other combat capabilities. As our force structure goes down in size, the concept of Global Reach assumes increasing importance.

Each of the four elements of our defense transportation system are absolutely essential if our national security strategy, using a CO-NUS based contingency force, is to work.



"Air power and air power alone gives us the ability to reach that austere or unexpected location, to establish presence, literally within hours."

The first of the four elements of this national defense transportation system is prepositioning, which keeps ready stocks at key locations around the world both on land and sea waiting to marry up with the necessary troops when the need arises. The second element is sealift, which is a very efficient way to move equipment and supplies. We can carry about 130 C-5 equivalent loads on one of our fast sealift ships; however, we currently have only eight fast sealift ships operated by MSC [Military Sealift Command], and it takes about 15 days for one fast sealift ship to get from the East Coast to Somalia. Our fastest fast sealift ships are not very fast.

The third element of this system is our surface mode of transportation, the Military Traffic Management Command. It's responsible for getting our people and equipment from the forts and the camps and the bases to the ports, whether those ports be aerial ports or sea ports. The last part of the defense transportation system is our air mobility assets. This is by far the fastest and most flexible way to get troops anywhere. By the way, it is air mobility that plays the key role in making pre-positioning and sealift work, because equipment without troops is of little value to a commander.

When you're looking at a scenario of regional conflicts that could arise anywhere, with little or no advance notice or knowledge about the area, having few forward deployed forces means that speed and flexibility take on an entirely new importance. We simply can't predict where we will have to fight our next war. We cannot know what sea or aerial facilities will be available and we cannot assume that things will occur at one of the locations where we happen to have prepositioned stocks. Air power and air power alone gives us the ability to reach that austere or unexpected location, to establish presence, literally within hours.

Under the old system, we relied on overseas staging bases to get our mobility assets to distant locations, but now those staging bases are becoming less available to us and we can no longer afford to rely on them. Instead, we may have to construct air bridges, using the combination of our tanker and airlift forces, so that we can move our combat forces quickly into the theaters of operation. Air mobility assets, tankers and airlifters, give us the ability to fly virtually to any location in the world without stopping at in route staging bases.

Now an outstanding example of how we can build an air bridge quickly and effectively to respond to a critical situation involving U.S. forces occurred back during the first couple of weeks of October. This story was related by [Lt. Gen.] Walt Kross in Los Angeles, and I think it's worth repeating here. I happen to have been on the road at the time this incident occurred. I turned on the television to watch CNN, and, like most of you, I was sickened to see American troops who had really gone to a country for humanitarian purposes being drug through the streets of that city. It really literally incensed me.

I got on the phone back to Washington. Through the JCS, I learned that we were going to be asked to move armored forces, so I set up a conference call with my TRANSCOM DCINC, my AMC vice commander, my J3/4 and the commander of the Tanker Airlift Control Center. I made it very clear to them that we were going to do whatever it took to get armor to our troops in Mogadishu. I told them that we would waive every regulation that had to do with crew rest, that we would use innovative concepts to make this happen. Within hours the C-5s began to arrive at Savannah [Ga.]. The 24th Infantry Division (mechanized) had already prepositioned the stocks and pulled the chocks for their armored personnel carriers and their M1s [tanks].

We used crew generation concepts that we had never used before in the command so we could put our primary air crews into crew rest. As soon as the aircraft were loaded, we launched. We flew non-stop from Savannah to Mogadishu, using four air refuelings over 17.5 to 19.5 hours. When they landed in Mogadishu, they off-loaded the aircraft. The quickest we off-loaded one C-5 was 45 min-

utes, and the longest took slightly less than two hours. There was no opportunity for crew rest or staging there. The crews got back onto the airplanes and flew to Cairo, Egypt, another 5.5 hours. Average crew duty day ran between 27.5 and 31 hours, but we got the armor where it was needed, when it was needed.

When the situation was briefed to the White House, and the President and was given his options -- close the force in this many days using sealift and in this many days using airlift -- the answer was simple: "It looks like we have no choice; we must airlift." That started it, and we executed it.

I must tell you that out of the first 18 aircraft that we launched, nine of them were flown by Reserve and Guard crews, not a bad Total Force effort, and you might have noticed how quickly the streets of Mogadishu became quiet. Suddenly we were back into the diplomatic mode, because we're dealing here with people who understand one thing and one thing alone, raw power and force, and that is what we were able to take to the fight.

"I would tell you, however, that history is replete with examples of the successful use of air mobility assets to achieve specific objectives that no other form of national power could achieve."

Within the defense transportation system, air mobility forces are a vital part of the whole and that's where the Air Force's Air Mobility Command, our command, comes into the picture. AMC is a major player in every ongoing military operation in the world today. When it comes to regional conflicts, AMC is going to be involved. Our troops are generally the first on the ground and they're the last people to leave. We already have the time-phased force deployment data (TPFDD) for the withdrawal from Mogadishu. The President has said that we will be out by 31 March. Some of the last troops to leave Mogadishu will be our air mobility element as it rolls up at the airport in Mogadishu.

"Airlift can and does accomplish political and military objectives without the aid and assistance of lethal air power."

Every day by rough count, we have about 140 missions flying around the world in 39 to 40 countries. Some of those countries have names that are not even pronounceable. In fact, last year there were only seven independent countries in the world in which Air Mobility Command did not operate, and two of those countries do not have runways. One of them is run by a guy by the name of Qaddafi, and he hasn't invited us back lately.

Many of these missions happen as a result of our expanding involvement in United Nations operations, and, while there has been some tempering of how our forces will be involved in the future, there is in my view no outlook for any lessening of U.S. support for this sort of operation. For the first time in history, all five permanent members of the United Nations Security Council -- China, France, Great Britain, Russia and the United States -- have troops in the field engaged in some kind of UN action.

As I speak to you today, the United States is involved in United Nations-directed humanitarian peace keeping operations in Somalia, Northern Iraq, the former Yugoslavia, Bosnia, Lebanon, the Sinai, Kuwait, Cambodia and Korea, just to name a few. All signs seem to indicate this kind of activity is going to increase in the future. We use all kinds of innocent terms to describe our response to these calls for help, as the Chief referred to it, the 911 calls. *Humanitarian assistance, disaster relief, peace keeping operations*, are some of the terms currently in vogue. However, to quote an old sage, a rose by any other name is still a rose. Regardless of the name attached, we're talking about operations involving air power, the non-lethal dimension of air power in many cases.

By characterizing air mobility forces as strictly a force enhancer, we limit our understanding of the potential of air mobility and non-lethal air power as a military instrument to achieve political objectives. I would tell

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you, however, that history is replete with examples of the successful use of air mobility assets to achieve specific objectives that no other form of national power could achieve.

Of course, the best known of these is the Berlin Airlift. The Soviet Union attempted to force the Western allies to abandon their rights to Berlin by cutting off food, supplies and electricity. In June of 1948, the allies had several options, but all of them seemed to be inadequate. If they remained in Berlin, they would not be able to supply their sectors of the city. If they tried to force a supply convoy through the Soviet Occupation Zone, war could result, and, if it did, world opinion would label them responsible for the beginning of the third world war. The only option that seemed to have a chance of succeeding was aerial resupply. Operation Vittles, as the effort was called, was intended at first to just resupply the American forces stationed in Berlin, but due to the success and the viability of the concept, President Truman later expanded it to include resupply of all Berliners. The Soviets were convinced that this operation would fail and that the allies would have to vacate the city, but the success of the Berlin Airlift eroded Soviet resolve, and the blockade was ended almost a year after it began.

You can call Operation Vittles a humanitarian relief operation, and most people do, but it is also an outstanding example of successfully using non-lethal air power to achieve political and military objectives. It demonstrated to the Soviets and to the world the resolve and solidarity of our Western allies.

Air mobility is much more than a mode of transportation. It is an instrument of policy and a war fighting tool. It achieves political objectives through the movement of international peace keeping bodies, removal of refugees from danger, and the delivery of disaster goods and relief services. The arrival of a C-130, C-5 and C-141 -- our big T-tail aircraft with the stars and stripes painted on them -- at airfields throughout the world signals the United States' interest, involvement and commitment. The mere capability to project force is a powerful deterrent to aggression. It also allows us to influence events through peaceful activities. Last year we flew C-5s into Katmandu, Nepal, carrying Bailey bridges

from the United Kingdom. It is not just coincidence that within weeks, Nepal stepped forward to contribute troops to the Somalia effort. We have flown food and medical supplies, tents and plastic sheeting into India after the earthquake there. We've been engaged on a regular and frequent basis flying medical relief and food into Russia and other former republics of the Soviet Union. We've taken helicopters, flak vests, helmets and vehicles into Cambodia to ensure that a democratic election could be conducted. We continue to fly airdrops of supplies into Bosnia and medical evacuation flights coming out of there, an effort that until now has allowed us, the United States, to be involved without putting large numbers of our men and women on the ground.

This list continues to grow, and, in all due respect to our troops, there isn't one shooter in the entire mobility crowd. However, just because our troops are out there employing non-lethal air power, it doesn't mean that our people are not being put in harm's way. It takes nerves of steel to fly into a foreign airport, not knowing what your reception is going to be. Without missile warning and defense systems, our crews go quietly about their missions, flying quarter century-old aircraft. In addition to playing a major role in winning friends and influencing events on behalf of this nation, without question, air mobility plays a force enhancement role. It enables, supports and improves the ability of other combat forces to accomplish their missions.

Having said that, I would tell you that, in addition, airlift can and does accomplish political and military objectives. As the first weapon of choice for our national command authorities, we can look back on the operations in which we've been involved over the past few years and see a unique phenomenon taking place. From 1989 to 1990, the old Military Airlift Command conducted five major air movements of national influence and nine significant humanitarian operations. In 1991 and 1992, we were engaged in 14 air movements of national influence and 24 relief operations, almost three times as many as in the previous two years. It is apparent that our allies, while they have the will and they have

the desire to step forward and become part of these operations, in many cases do not have the capability to get their troops and materials to places they need to go. It remains to us, the Air Mobility Command, as the air component of the United States Transportation Command, to lift those forces to the area in which they're needed.

The United States has this unique air mobility capability, but we are in danger of losing it. Our aircraft are old and tired. The C-141, our core airlifter, was designed in the 1950s; built in the 60s; stretched and made air refuelable in the 1970s; and flown hard from the very beginning. It has been and remains a grand workhorse, but today, out of 244 C-141s, I have 85 fully operational and available; of that 85, 15 are in the Guard and Reserve and 60 are in the active force, with the remaining 10 fulfilling training duties at Altus AFB [Okla.]. That's how many I possess, not how many I have operational. It is on this base that we're trying to run this worldwide operation.

During that period of time, from the 1960s hence, the rest of the Air Force has been modernized and updated at least twice. I was part of this process, so I'm not accusing anybody of dereliction of duty, but I think we have not focused as heavily on this area, and we need to start paying some attention to it. We've built and fielded two new bombers during this period of time, and we have fielded or plan to field five new fighters. Tankers and airlifters have largely gone about their business in a quiet fashion and have been relegated to a less important place in our list of priorities. Of the billions of dollars the Air Force has spent in the past 10 years on aircraft modification, a very small percentage has been spent on your air mobility assets.

If you ask me why the C-141 is having the problems it has today, I would tell you that it is not because people were not able to anticipate this. We were told by some folks this was going to happen if we didn't spend the money. Why we have to be seriously looking at an upgrade to the C-5 and why we're being forced to do innovative things with the tankers is simply because we have not paid enough attention to these forces.

While the accurate numbers are very hard

to obtain, a most conservative review reveals, that in the 10-year period from 1984 to 1994, the Air Force spent roughly \$23.2 billion on aircraft modification. Of that amount, \$1.4 billion was spent on the C-130, \$2.1 billion on the C-141 and \$604 million on the C-5. We spent an additional \$6.5 billion re-engining the KC-135. Let me just focus on these numbers. Of the \$23 billion the Air Force spent on modification in the last 10 years, only 11 percent was spent on our strategic lift assets, while the oldest aircraft in our inventory were being flown at a relentless operational tempo.

A quick look at our programmed modification accounts for the next six years shows that all of our air mobility forces, tankers and airlifters, are getting only 18 percent of the account. As the defense budget comes down, we have to remember that our new strategy will not be worth the paper it's written on without mobility.

General [John M.] Shalikashvili, the Chairman of the Joint Chiefs of Staff, in his testimony on 8 February, focused on what he called the requirement for strategic agility. Let me quote from his posture statement. "The risk is this," he says. "Right now we have enough lift to move small numbers of forces to any theater in the world very quickly, but we do not have enough to rapidly expand this flow into a torrent bringing in more and more forces, equipment and munitions at rates on which any of us should feel comfortable. The delays in time will be measured quite horribly in lives and territory lost." He goes on to say, "A famous Civil War general disclosed the secret of his battlefield successes as the ability to get there the 'firstest with the mostest.' We have to get better at getting there the firstest. Our belief that we will is a critical assumption we accepted when we measured the size of our projected force. The means to do this are the prepositioning programs, and the lift expansion programs, both are included in the FYDP [fiscal year defense plan], but we also have to ensure the lift we currently possess is maintained and modernized. We do not want to rediscover, as we did in our deployment to the Gulf War, that some of the assets we are counting on are not nearly as ready as we believe."

By the way, nine of ten CINCs [Commanders in Chief] listed strategic lift as one of their top five major concerns and deficiencies when recently asked about it by the Chairman. General Loh, in his presentation yesterday, talked about lift and the importance of it in supporting his forces as they go forward, and in supporting him as an air component commander. General Rutherford yesterday talked about the tyranny of distance in the Pacific, and that's where air mobility assets really work as force enhancers.

At USTRANSCOM, we are taking stock three years down the road in a post-Desert Shield/Desert Storm environment. We're doing that because my experience in this business has been that the half life of information and lessons learned is directly tied to our three-year PCS assignment process. Three years later you can generally expect everybody who was there, who remembers the direct lessons, is gone. We have started to hold a series of symposiums. We're using the Air Force, the Army, and next month we bring in the Marines and the Navy to look at lessons

learned from a transportation perspective.

We have to pay more attention to the lessons of the past. We have to come up with more innovative ways to support the shooters. We have to find ways to get them to the fight and support them once they're there, and, if this nation wants to sustain and improve its use of non-lethal air power as the first weapon of choice, we must have a new core airlifter. This has to be something that looks an awful lot like a C-17, if it isn't a C-17, in militarily significant numbers.

In the Cold War paradigm, I would have told you that transporters and tankers were sometimes considered second class citizens. Let me tell you that this is a new era, and we don't have any second class citizens in the Air Force. We don't have any second class citizens in Air Mobility Command. We have a bunch of professionals who are at the heart of our national strategy. They're providing air power, in a non-lethal dimension, many times, for this nation, and we're proud of it. As an Air Force, we ought to be proud of it and we ought to support it. (Applause.)

General Ronald R. Fogleman

GENERAL HATCH: *Thanks very much, General Fogleman, for those comprehensive remarks. We have quite a few questions here, some of them very specific. This one speaks to the C-17 and the decision to buy 40, but with the potential for an evaluation that could lead to further purchases. What are the major elements of this evaluation, and when will we get that answer?*

GENERAL FOGLEMAN: First of all, just a general comment on the decision, which has led to what some people are now referring to as the probation period. I must compliment Dr. Deutch [the Honorable John M. Deutch, Under Secretary of Defense for Acquisition] and the folks in OSD who have crafted the approach that they have taken to this. Last year, when I went to the Hill and started my testimony, there wasn't a whole lot of support for the aircraft, and we were in danger of losing it. Dr. Deutch went to the Hill and said, "I'm in charge here; I'm going to get you the answers; and I'm going to get them for you in a controlled fashion." He sent some pretty harsh letters to McDonnell-Douglas and to the Air Force. He set up a Scientific Advisory Board and he set about trying to discover the facts, as related to this aircraft and the program. You know that it has been a long, drawn out process, the mini-DAB [Defense Acquisition Board] series, as it became known in Washington. In the end, I am convinced that he has a good understanding of the program, and that we have the opportunity to prove that this is the airplane, not only that we need, but that it will do what it is we want it to do. Essentially, he said, "O.K.," we will make a commitment to buy 40 airplanes. They have not perturbed the out-year funding because that becomes fungible funding. In other words, the money has been left in the program. People

can't go around screaming that the unit cost has gone off the chart because we're only buying 40. We don't know how many we're going to buy. We have a commitment to buy 40, and it is a bad argument to say that we're only going to buy 40, and the cost per unit is off the chart.

In that two-year period, we are going to achieve initial operational capability. In the spring of 1995, we will complete our flight test at Edwards [Air Force Base, Calif.] and we will conduct an evaluation called the reliability, maintainability and availability test, a 30-day test that is the most stringent test that any airlift aircraft has ever been put through. I have talked to those people who understand this term; it is a four-shot AMRAAM test, believe me, for an airlift airplane.

We will have some operational experience. We will have the completion of the testing and we will have this RM&A. Based on those three things, Dr. Deutch will be able to pull together exit criteria so he can make a decision in November of 1995, that says how many C-17s we will buy, if we're going to buy more, or, if it turns out to be a disappointment, what we are going to do when we terminate the program. In order to have options, we are concurrently looking at the nondevelopmental airlift aircraft acquisition program. In that side of the house, we have everything from the C-5 to commercial aircraft that are coming off production lines, to derivatives, to remanufacture of excess aircraft that are out there. I think we have an honest opportunity to put together a coherent airlift force.

GENERAL HATCH: *Thank you Ron. The next question asks about the wing problem with the C-141 and how that stands.*

GENERAL FOGLEMAN: It's an interesting phenomenon. I have been recently

accused of being a communist on this issue, because, as you know, the weep hole problem surfaced big time last May as a result of a Scientific Advisory Board finding. At that time in their finding, they also said that as they continue to look into the C-141, they are afraid that they are going to find some unknown problems. That got us rather excited and interested in the other alternatives as we looked down the road. We went to work on the wing problem. A lot of people thought that I grounded those airplanes as a grandstand show. That was not the case, as I have stated on many occasions. We were putting people at risk flying those airplanes in the condition they were in.

So the Air Force Material Command went to work and tried to use a new technology to fix these airplanes. It is a boron repair process, and, in order for this boron repair process to work, it must have a very clean metallic surface to bond with the patch. In order to clean that surface, the best material they were able to find was an abrasive called aluminum oxide. When they went to clean the surface inside the fuel tanks and the exterior of the airplane, they built a container so that this stuff would not get out into the tanks and into the air. The problem is this stuff is like talcum powder, and we underestimated its ability to migrate. This boron repair is working very well, and we are bringing the aircraft back at an accelerated rate. In fact, in December, based on what we had found and where we were going, I was able to announce that we would have 80 percent of the C-141 fleet back in service without any restrictions -- no load carrying restrictions and no air refueling restrictions -- by the end of March.

Toward the end of December, we started running into a problem with the aircraft having engine rollbacks at low power settings. We got into it and discovered that this aluminum oxide had migrated into the fuel systems, and it was finding its way into the fuel controls and contaminating airplanes. We ended up grounding the fleet. Sixty-one airplanes had been repaired, and we had to ground them and develop a cleaning process. We did that, but in the meantime, we stopped repairing airplanes until we could develop a new way to capture this abrasive. We have done that. We

are now back repairing airplanes, and cleaning the ones that we have already repaired and [General] Ron Yates' guys [AFMC] tell me that we will still reach 80 percent of the fleet. In other words, all of the C-141s that can be repaired using either a drilling method or the boron repair will be repaired by the end of March. We have 43 airplanes that actually need to have new wing panels manufactured, and we don't have those in stock. We will start getting those wing panels in the April time frame and we will bring the other aircraft up by the end of the year.

GENERAL HATCH: *Thank you Ron. The next question asks how you are fitting tankers into the channel run missions?*

GENERAL FOGLEMAN: We're doing it in two ways. Quite frankly, we've had to make up for the shortfall in C-141s by having gone out and bought or contracted more commercial augmentation in the channels. This has helped us, by the way, in our Civil Reserve Air Fleet (CRAF) program because it's business out there that can attract people who want to participate in that. We have also looked where we have high frequency, low volume traffic that we could carry with a KC-135. Because we had a lot of C-141s on the ground and we had quite a few C-5s in depot, we went out and cannibalized rollers out of those aircraft and we put rollers in 43 KC-135s. We have used them in the channel [missions] and we have also, under the lean logistics business with the two level maintenance, set up a tanker express going west and a tanker express going east that helps move spare parts into the theaters of operation. We are using the tankers in those two ways, where the channel will allow high frequency and low volume.

By the way, a KC-135 with rollers on the floor can carry 15 tons of cargo, and you can get to the flight deck or the cargo deck of a KC-135 with our existing 25- and 40K loaders. So it's a pretty good use of the aircraft. The problem is that when the balloon goes up, and STRATCOM [U.S. Strategic Command] puts their bombers back on alert, I'm going to lose part of my tanker force. When the movement starts, I'm going to have to give priority to [General] Mike Loh to move his [ACC] things. So what appears to be an excess tanker

capability evaporates very rapidly in terms of being able to help me with sustained airlift, but it does help us in these contingencies.

GENERAL HATCH: *Thank you Ron. The next question for General Fogleman says, "Is the Air Force considering acquisition of commercial hardware and software systems used to track and route freight?"*

GENERAL FOGLEMAN: Yes, we're looking at a lot of different systems and we are deep into developing a system that takes advantage of the legacy systems that exist. The program is called In Transit Visibility (ITV). U.S. Transportation Command is the executive agent for the Department of Defense for in transit visibility. We are developing and have fielded the prototype, and it is doing great things. It is a command, control and in transit visibility system called the Global Transportation Network. If I would have been smart enough, I would have thought to bring it here to demonstrate it. It does awesome things today, and it is a prototype. We are about to put an RFP in the street. We have great teams from industry, many of whom are here today, who will compete to build the actual system.

I have declared 1994 the *Year of ITV* for the Department and for our U.S. Transportation Command. I suspect guys who try to run large organizations with slogans, but my predecessor, [General] H.T. Johnson, in 1992, declared 1992 the *Year of the Container*. The purpose was to raise the level of awareness on the part of DoD to the benefit of intermodal transportation with these 20- and 40-foot containers. That's the way the commercial industry moves things. That was so successful, his declaring 1992 the *Year of the Container*, that I decided to take a page from his book and do this with 1994 as the *Year of ITV*.

And so yesterday at Scott [AFB, Ill.], the NDTA [National Defense Transportation Association] Technology Committee was focusing on this very issue, ITV. We have run an experiment on ITV with the deployment of forces to Somalia where we use RF [radio frequency] tags on these containers. We have laser disks that give us an inventory of what is inside a container. A container is stuffed at the Shenandoah DLA [Defense Logistics Agency] Depot and gets put onto a truck. As

it goes out the gate of that depot, there is an RF reader that tracks when a container has left the depot; uplinks it to a satellite; and brings it down to a tracking system that we have. When that truck goes into the gate at Dover [AFB, Del.], the same thing occurs. This system is working, and on the other end it has increased their ability to process supplies in Mogadishu fourfold, just having that laser disk. Now we don't have a lot of these. This is one test we're running, but we're moving. Doing a lot in this area is the bottom line.

I'm excited about ITV, this is good stuff.

GENERAL HATCH: *Thank you General Fogleman. Here is another specific question. Is the Air Force considering acquisition of new C-130s?*

GENERAL FOGLEMAN: Of course this is no longer in my area, and I think Mike Loh talked to this yesterday. I talked to the Chief about it, and I think that the answer is "yes" in the sense that, since it is not my area, I will feel free to speak, because I can then claim ignorance and let it go from there. From my perspective and in all candor, what has happened over the last few years is the Congress issues us some C-130s. That's a heck of a way to program a force, but it's a fact. It happens, and so we ought to relax and enjoy it. We have been issued C-130Hs for some time now. I remember I was in the building [Pentagon] when they first started coming out, and there was a lot of hand wringing and some said, "Oh, this is going to screw up the Total Force because they're giving them to the Guard, and they don't have the support equipment, and they're not 100 percent common with the existing airplanes."

Well, we worked our way through that, and guess what? The C-130H became a great airplane, not only for the Guard and Reserve, but for the active force and for the free world. The C-130J is also a tremendous airplane. I think that it will be good for America, good for the Air Force, and good for our aerospace business to get them into our inventory. I think that is the approach we're going to take, but I'm not the officer in charge. If I've said anything wrong, Mike Loh can clarify it when it's over.

GENERAL HATCH: *Thank you Ron. A final question concerns CRAF [Civil Re-*

serve Air Fleet], restructuring of that program in the light of the loss of Pan Am and also different ownership of airlines that are projected for the future.

GENERAL FOGLEMAN: We are in trouble with our CRAF Program. It still is a great program, but the problem is, of course, that we had never activated it until Desert Shield and Desert Storm. So many of the airlines saw all the benefits, and they never saw the downside. But to their credit, when the call went forward, when we activated Stage I and Stage II, every airline fulfilled its commitment. Now that the war is over, and they go back into a very competitive business, they are looking at the impact on their business base of doing that. We now have the following situation: It is a voluntary program. The primary incentive to be engaged in CRAF is that the Department of Defense will give you peacetime business in return for the promise to come to us when the balloon goes up, not only with your aircraft, but with four air crews per aircraft, at a pre-negotiated rate, so we don't have to start negotiating when the bombs and bullets are flying.

The industry now sees that, as we draw down our forces overseas, there's less business, so there's less of an incentive for them to be involved. Additionally, they look at what happened to them with the Gulf War, where they put their prime airplanes, because that's

what they committed, and other people who were not committed to the CRAF, or international carriers, came in behind and took their business base away. So the airline industry is less inclined to want to be engaged in this thing. We have two segments of the industry, a cargo segment and a passenger segment, and the things that incentivize the passenger guys to be involved in CRAF disincentivized the cargo guys. So we're in this balance.

Just yesterday, I went through the latest review by my staff on the RFP for the FY95 CRAF program, and we're going to put that on the street. We will have a further erosion of the cargo portion of the CRAF in 1995. We are hopeful that the changes we have made will allow us, in 1995, to get the level of passenger participation required for Stage II, something we did not have this year. In the end, when you look at that chart that I don't like, the sand chart that shows how we say we will achieve 57 million ton miles per day, one-third of that is ascribed to coming from the CRAF at Stage III. We currently do not have commitments from all the people that we need to make that come true.

GENERAL HATCH: *Thank you very much for being with us today General Fogleman. Thanks for your very good words. We appreciate all you do and all the help you give the Air Force Association by speaking here today.*


"Joint Training — New Opportunities"

It's great to have the chance to be with you again and bring you up to speed on what's going on in the world of Air Force education and training. As those of you who were here last year and also with us in Los Angeles last October might recall, we've been intently focusing on the Year of Training initiatives. I'm glad to say that just about everything we hoped to achieve as a result of the Year of Training and the initiatives that emanated from it is on track -- alive and well. Thanks to some great funding priority, we've survived three major budget cuts and still have our programs moving in the right direction.

"Why in this new world and the realities of the fiscal environment do we want to stick with a structure that has four independent overheads which cost all of us an awful lot?"

In preparing for today's address, I considered the backdrop of the big changes and new directions for our armed forces as a whole. Many of you have heard me talk about how we're drawing down, coming home from overseas, changing the relationship between our active and our reserve components, trying to define what kind of an Air Force America needs in the 21st century, and becoming better businessmen -- and other things that are big changes for us ... But there's one thing we're doing that is either directly or indirectly related to each and every one of those, and it's one about which I frequently get asked questions: the area of joint training. So today I'll provide our perspective for you by showing where we are, what we've achieved, and where

we're going -- and why.



WHY JOINT TRAINING?

- SERVICES DO LOTS OF SIMILAR TRAINING TODAY
- AS WE DOWNSIZE, BEST ANSWER MAY BE JOINT TRAINING
 - ECONOMIES OF SCALE
 - EXPLOIT OUR BEST -- CLOSE WHAT'S UNNEEDED
 - LEARN FROM EACH OTHER
- SEVERAL POSSIBILITIES
 - QUOTA
 - COLLOCATION
 - CONSOLIDATION
- MAKE IT JOINT, PROTECT SERVICE EQUITIES, MAINTAIN STANDARDS
- IF WE DON'T, SOMEONE ELSE WILL -- AND WE MAY NOT LIKE THE OUTCOME!



Many ask "Why joint training?" Well, we've been through a number of cycles over the years, but as you look back through the history of at least ATC -- Air Training Command before we became AETC -- it appears that some time back in the '60s, the services began to really emphasize organic training within their own infrastructure. As we pulled away from any collocated, multiservice, or joint arrangements in the training and education arena, we became basically our own autonomous units. For obvious reasons, some of which I will talk about today, the time has come to re-address that trend.

As we've grown smaller -- and we are getting very much smaller on a very fast scale -- we've taken some initial steps to try to look out there in the "crystal ball" to the Air Force of the late '90s or into the 21st Century to figure out what kind of a training infrastructure we need to sustain ourselves -- and we have downsized. We decided very early on in our base closure sequence to close four large training installations: Chanute Air Force Base in Illinois, Lowry in Colorado, Mather in California, and Williams in Arizona. Three

of them closed last year, and we're closing Lowry this year. The other services, as I will show you in a minute, have taken some similar steps. Pushed by ideas that came from the outside, as we looked at the alternatives to re-size our infrastructure early last year it became very evident that there's a great amount of potential out there if we look at it from a joint perspective and look at it *together*.

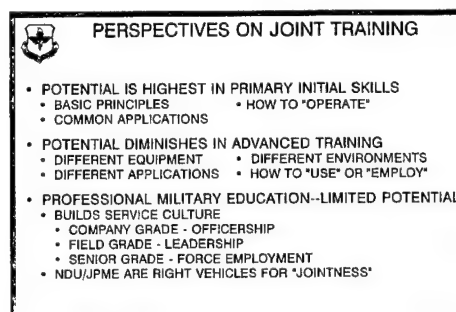
When you look at the primary initial skills we're training today — for all airmen, non-rated officers, pilots and navigators, for people in dental hygiene, in carpentry, in jet engine repair, serving as a crew chief, or being a primary undergraduate pilot — the goals you're after and the skills that you want to impart to your students are very similar. Why in this new world and the realities of the fiscal environment do we want to stick with a structure that has four independent overheads which cost all of us an awful lot? So we are into a process of looking at where we might want to consolidate, collocate, or use a quota arrangement to meet our training requirements.

First, we have arrangements out there today that use the quota system. In other words, the services agree that one service can provide the training for everyone with that service serving as a "single manager" or "agent" to issue quotas for that course to other services. In some cases we've had that single managership assigned by OSD in a given functional area.

Second, we can have collocation -- maybe one service has a predominantly good facility available that's big enough to handle a couple of services' training requirements, but the training needs to be a little different because of different equipment, philosophies, environments, applications, or whatever. In that case, the services agree to go to a single location -- they're collocated -- but still keep their faculties and their student bodies separate.

"In the penchant that's rampant today for consolidations and for jamming large organizations together . . . some feel the right answer is to create a Defense Training Agency. None of the services like this idea because training is so important to making sure your people enter that first operational assignment with the right skills, the right attitude and the right character to do the job for you."

And third, we have a consolidation option where we are so similar in what we want to achieve and how we do it, that we decide to come together with totally integrated student bodies and a totally integrated instructor cadre. Today, we're even moving a step further to establish a rotating commandership to achieve full consolidation.



The potential for such integration is predominant in primary initial skills where we have much in common ... so that's where we're focusing today. As you move beyond that and get into advanced training where you're working on the specific equipment to which you're going to be assigned in your first operational assignment, the potential diminishes -- and the desire and need arise to maintain service equities.

Next, in one particular area of which you might be aware, there's a recurring interest in certain parts of Congress to jam our professional military education system together and make it totally "purple-suit" -- to make it "one." There are some curriculum develop-

ment and school administration economies and efficiencies that could be attained by coming together, perhaps within the National Defense University structure at Fort McNair in Washington, D.C. But generally speaking, separate schools are very important to building the service "culture" that really is at the heart of jointness. It's the capability of the independent service to pull together with the other services that really makes our joint capabilities so great.

In the penchant that's rampant today for consolidations, and for jamming large organizations together to make them better and more efficient, it's obvious that there are those out there who feel that the "right" answer -- as it has been in the past in logistics, mapping, communications and other areas -- is to create a "Defense Training Agency," or perhaps a "CINTRAINING" over a military organization that's totally joint. None of the services believe in this idea, because training is so vital to making certain your people enter that first operational assignment with the right skills, the right attitude, and the right character to do the job for you. We've been given a challenge to move out in this arena, and I believe we're making good progress.

Let's start by looking at our progress in technical training -- the training that we predominantly give to our new folks that are non-rated officers and to our enlisted people as they begin their careers.

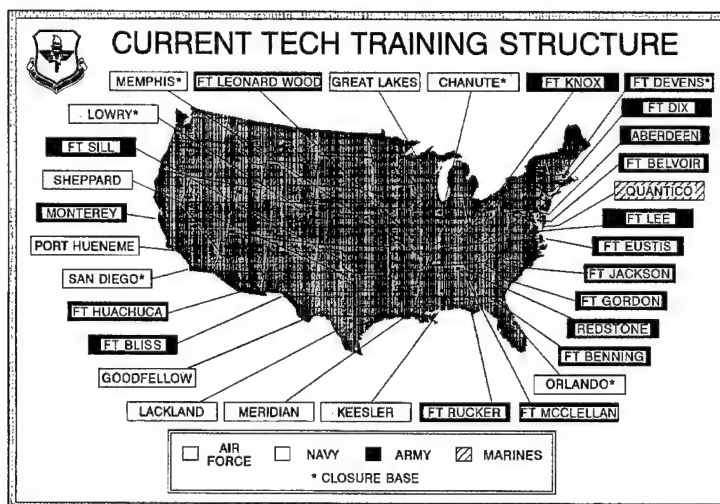
As this map illustrates, our current tech training structure is quite extensive. Even with the closures shown, you can see that this is big business. When you're talking about putting all the services together and looking at everything that's going on to analyze what you might want to change and bring together in a joint structure, you're talking about a lot of *places* and a lot of *activity*. We have already closed Chanute in Illinois. We're going to close Lowry this September. The Navy, as you're well aware -- particularly if you live in this local area -- has announced they're going to close the Orlando Training Center and their training centers in San Diego and Memphis. The Army has announced they're going to close Fort Devens in Massachusetts.

Traditionally, we and the Navy have each

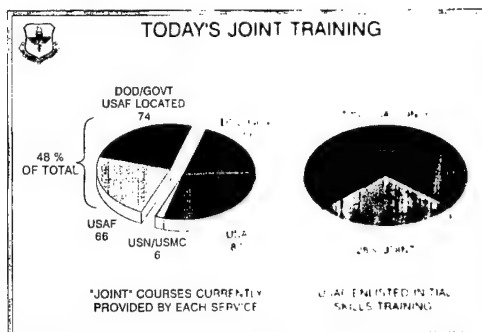
had six centers. The Army takes a different approach: its philosophy has been to collocate small training units at the large posts where their operational divisions are located -- that's why there are so many Army posts on the map. Thus far, we've already signed up to closing two out of six in the Air Force, three out of six in the Navy and one out of 18 in the Army, although I think you will see that change as we move into more rounds of the BRAC -- Base Realignment and Closure -- in '95 and beyond. This is big business, big infrastructure, and lots of potential to pursue efficiencies -- and, of course, that's part of our goal.

"About 28 percent of our enlisted folks who come out of 'boot camp' go into the joint environment for their initial tech school in one of those 300 courses This percentage will likely approach 50 percent within a few years."

To illustrate a bit about what's going on today as we look at our training structure, this pie chart reflects courses and shows the nearly 300 courses out there today that are being conducted in a joint arrangement of some



sort. Those DoD and government courses at the top are those that are being done by one service as a "single agent" or as an "executive agent" appointed by OSD or some other government agency. Those hosted by one of the four services are shown in the lower part of the pie chart.



A couple of key points here: nearly half of the total joint training is occurring on an Air Force base -- predominantly because we have good facilities, and as we've downsized we've gained excess capacity of which people have taken advantage. Also, though this total of 300 courses is only 10 percent of the total number of courses that we teach in the services, this particular 10 percent includes some of the "biggies" -- those with high student loads.

Now let me share some examples of what's going on jointly that the pie chart includes. In the Air Force for example, as the "DoD executive agent" we teach intelligence courses at Goodfellow Air Force Base in San Angelo, Texas, predominantly in the imagery and SIGINT worlds. At Lackland Air Force Base in Texas, we have the DoD Dog and Dog Handler School where we teach not just for the DoD, but for every federal agency that uses dogs. Also at Lackland, we also teach English to over 4,500 foreign students from nearly 110 countries each year as executive agent for the Department of Defense. DoD's Foreign Language School is at Monterey, California, and it's administered by the Army. Though not as executive agent but just through a past agreement, we have a multiservice weather school at Keesler Air Force Base, Mississippi, where all the weather people -- enlisted and officers from three services, all but the Army -- are trained. At Lackland, we have a law enforcement school where all the

"cops" for the Air Force and the Navy are trained. Also, the Army teaches welders at the Aberdeen Proving Ground in Maryland, Morse Code for SIGINT people at Fort Huachuca in Arizona, the Navy teaches metal working in Memphis, and so on and so on -- a lot of this is going on today. When you look at it from the Air Force people point of view, about 28 percent of our new enlisted folks who come out of boot camp at Lackland each year will go into the joint environment for their initial tech school in one of those 300 courses. This 28 percent is pretty good -- it equates to some 8,400 folks having that experience this year ... and through other initiatives, this percentage will likely approach 50 percent within just a few years.

INTERSERVICE TRAINING REVIEW ORGANIZATION

- FORMED IN 1972
- IMPROVE TRAINING, EFFICIENCY AND EFFICACY
- DEVELOP INTERSERVICE TRAINING
- PROVIDE FOR INFORMATION EXCHANGE
- \$311M COST AVOIDANCE TO DATE
- PRIOR TO 1992 A MATTER OF CONVENIENCE
- SINCE 1992 PROMPTED BY NORMAN POWELL, JEREMIAH
- COURSE EVALUATION, ASSISTANCE, AND FOLLOW-UP
- LONG TERM PLANS TO HAVE A PRODUCING RESULTS

How do we make that happen? We have a group, chaired by myself and my counterparts in the other services called the Interservice Training Review Organization - "ITRO". It was formed in 1972 to basically act on what I would call "matters of convenience."

In other words, when one service had a capability that was outstanding in one area and another service had a requirement that came up for one reason or another, often the decision was made to just go and train with that service. We would then make the arrangements, and that's what led to some degree to the beginnings of the joint training pie charts.

In the past, ITRO would generally come together on a quarterly basis and look at courses for commonalities -- very specific courses until just recently. Today, we're asking to what extent we're trying to do the *same basic things* in those courses, how fea-

sible is it to move them all to one or two locations rather than perhaps four, and what savings we might gain ... and we've achieved some substantial savings over the years.

A key change in our approach occurred in 1992 when Senator Sam Nunn, Chairman of the Armed Services Committee, stood up on the Senate floor and talked about roles, missions, and jointness. He really came down hard on training together, and got us thinking even deeper about it. And then General Colin Powell, Chairman of the Joint Chiefs of Staff, in his *Roles and Missions Report*, gave us some very specific guidance about what we should pursue, and we're pushing it at full throttle today.

As we started out using the traditional approach of the ITRO and looking at individual courses one-by-one, we often got bogged down in course differences. We weren't making much progress and we saw these innumerable course lists before us and we thought, "Gee, we'll never make any progress." So we backed away from that approach, and now we're looking at courses by broad functional area ... in other words, for all the courses in a certain functional area, we're asking what we should change in the way we do business to be able to bring courses together and do things more efficiently and jointly. This longer term review is really paying off for us.

"Housing is an issue for us right now. After closing Chanute and Lowry and moving nearly 40 percent of our resident enlisted training from one location to another, we have heavily loaded up at Keesler, Lackland and Sheppard, and the communities are finding it difficult to provide the quality and amount of base housing we need."

Here are some examples. Most of those have occurred just within the last year and a half as we've taken this new approach to looking at course commonality. These courses are either in being today, or they're underway

JOINT TRAINING STATUS		
IMPLEMENTED/APPROVED	NEARING DECISION	
USAF	VEHICLE OPERATOR	
LAW ENFORCEMENT	VEHICLE MECHANIC	
CRYPTOLOGY	LEGAL	
WEATHER	CHAPLAIN	
CALIBRATION		
FOOD SERVICE	UNDER REVIEW	
UNDERGRAD SPACE TRAINING	CONSTRUCTION ENGINEER	
POWER LINE SPECIALIST	ENVIRONMENTAL	
USA	MEDICAL SPECIALTIES	
METALS TECHNOLOGY	INFORMATION TECHNOLOGY	
WELDING	DRUG AND ALCOHOL ABUSE	
HELICOPTER MAINTENANCE	INTELLIGENCE	
USN	AIRCRAFT MAINTENANCE	
EXPLOSIVE ORDNANCE	COMMUNICATIONS TRAINING	
NON-MORSE OPS/ANALYST	LAW ENFORCEMENT/	
WATER SURVIVAL	CORRECTIONS	
USMC		
IBM COMPUTER TRAINING		

toward implementation -- and we've got the plan to keep it going. You can see that there's a good chunk of them coming to Air Force bases -- and, again, that's largely because we have made more of a monetary investment in the quality of our facilities and infrastructure over the years than the other services. Nearing decision, the vehicle operators course will probably go to the Army's Fort Leonard Wood in Missouri; for vehicle mechanics, we will come together with the Navy at either Port Hueneme in California or at Lackland Air Force Base in San Antonio.


There're some other biggies coming, and we are just beginning a review on a second set of major course areas. Three or four are of great interest to us in the Air Force -- engineering, the medical specialties, aircraft maintenance, and intelligence. Since we already do a large portion of the joint intelligence training at Goodfellow, that base will be a player in whatever we decide to do in the intelligence arena. So that's a "scorecard" of where we are after about a year and a half of working this problem a little harder than in the past.

Such changes certainly aren't free, and involve money -- both savings and investment. To give you a feel, when you look at it course-by-course, you don't always see huge numbers ... but over time it can add up. Our latest five studies show it would cost the Air Force \$1.6 million for facilities and moving things from one location to another -- but it would *avoid* \$13 million. We would also get \$1 million in recurring savings, a payback which would be immediate.

**"Aerospace Power:
Regional Conflict
in the 1990s"**

COST/SAVINGS ESTIMATES				
WHAT WE AGREED TO	AF ONE-TIME COST	DOD ONE-TIME COST AVOIDANCE	DOD RECURRING SAVINGS	PAYBACK PERIOD
LATEST 5 STUDIES EXAMPLES	\$1.6M	\$13M	\$1M	IMMED
HELO MAINT (USA/USAF)	\$8M	-0-	\$13M	6 YRS
FOOD SERVICE (USN/USAF)	-0-	\$4.5M	\$5M	IMMED

If you look at some examples of the extremes, sometimes you can do something to get an immediate payback. The Navy was going to move their food service from San Diego as they closed that base to Pensacola, Florida, and had an enormous MILCON bill; but by coming to Lackland and joining our school, they're going to be able to avoid most of that, so we -- the DoD and the taxpayer -- will get immediate payback. On the other hand, taking our helicopter maintenance from Sheppard Air Force Base in Texas and putting it together with the Army at Fort Eustis in Virginia will cost us a few bucks up front which will take six years to pay back, but in the long term it will be exactly the right thing to do.

TECH TRAINING ISSUES	
	
• MONEY	
• ADMINISTRATION AND COMMAND	
• HOUSING	
• BASE CLOSURE CONSTRAINTS	

There are a few more issues I'd like to cover. Just as with everybody else who is trying to do things today, money is an issue. But I don't really mean an inability to get the money we need to do this ... the problem is one of *timing*. We started into this process on a timetable that took us right on through the preparation of the '95 budget, and we missed

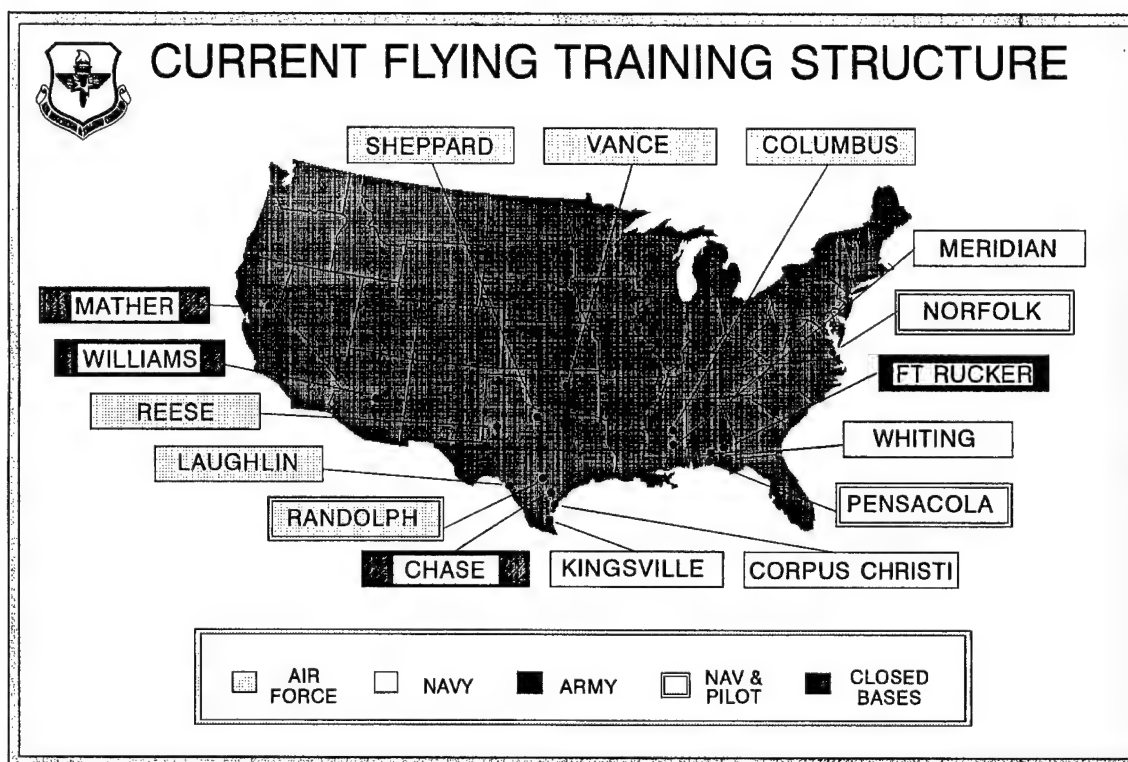
the "window" to quantify what we'll need to do the things we've agreed to do. So the '95 budget that just went to the Hill does not have facilities money or MILCON specifically aimed to finance the initiatives to which we've agreed. For '95, we're going to have to execute our changes "out of hide" -- and I think we're stepping up to doing just that. But in the '96 Program Objective Memorandum and beyond, we will probably attempt to "fence" a small amount of MILCON and facility money to draw from as we make these decisions -- so we can move out and get these courses consolidated in a timely fashion.

Administration and command are also issues for us. In the past when we've had just a few joint training situations, each of the services could readily afford what I call a "den mother" organization -- a small organization that usually has between seven and maybe as many as 40 people at another service's base to take care of its students while they're in school. But as we move to more and more of these arrangements, that's going to become a larger load -- so we're working with the other services to establish a "student squadron type" approach that will be joint in nature and help us hold down our manpower costs.

Housing is also an issue, particularly for us right now. After closing Chanute and Lowry and moving nearly 40 percent of our resident enlisted training as a result of these closures, we have heavily loaded up Keesler, Lackland, and Sheppard, and the communities are finding it difficult to provide the quality and amount of base housing we need. So when we come to an agreement with the other services to move additional training into those three locations, they're a little leery about coming to towns where housing is getting tighter and tighter and tighter. We're working this issue from two perspectives: the first is to obtain military family housing funding, and the second is getting the communities to step up to what for them is a really great investment opportunity -- building additional housing and apartments.

And finally, there are the base closures. Unfortunately, in the '91 and '93 BRAC, all of us probably put too much detail into their base closure and realignment submissions to the President's Commission and Congress and

now we're living with it. For example, now that we get together and we think about what we might want to do as one service closes a training installation and we need to move some training, we find that unless they had specified -- as the Navy did in great detail -- where that particular course was going to move when, let's say, Orlando or San Diego were to close, you'd have to wait until the next BRAC window to get that changed because it's in *law*. That really has cramped our flexibility and slowed down our implementation schedule to some degree. So I think we're learning from our past endeavors, and we will talk about moving training around in the '95 BRAC submissions -- but we won't be quite as specific in detail about where it's going unless we're sure we have the answer.



Now let's take a look at the other side of the picture -- flying training. Just like in tech training, we've got a large infrastructure, mostly in the southern part of our country because of its good weather. We've already closed some of the bases: Chase Field in south Texas was closed by the Navy, and we've closed both Willy and Mather. We're now looking at options collectively to deal with the remaining part of the infrastructure. We've gotten a lot of guidance from Senator Nunn and Chairman Powell; also, right after coming to office, Mr. Aspin responded to the Chairman's *Roles and Missions Report* by issuing some guidance about consolidating portions of our flying training programs.

JOINT FIXED-WING TRAINING

SECDEF GUIDANCE:

- CONSOLIDATE INITIAL FIXED WING AIRCRAFT TRAINING AND TRANSITION TO A COMMON PRIMARY TRAINING AIRCRAFT
- ESTABLISH 4-TRACK FOLLOW-ON TRAINING (OPR: SECDEF; OCR: SECNAV)

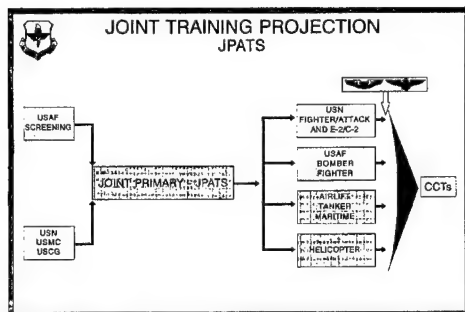
"Aerospace Power: Regional Conflict in the 1990s"

We were directed to put our initial fixed wing aircraft training -- known as our primary training -- together and transition to a common primary training aircraft, JPATS. Of course, we were already planning to do that, but now we've received specific direction from SECDEF to do it. We've got a competition coming up this year, looking for a source selection very early next calendar year.

JPATS CANDIDATES

- BEECH/PILATUS (SWISS) PC-9 MK-11
- GRUMAN/AUGUSTA (ITALY) S-211
- VOGHT/FMA (ARGENTINA) PAMPA 2000
- NORTHROP/EMBRAER (BRAZIL) TUCANO
- LOCKEED/AEROMACCHI (ITALY) T-BIRD II
- ROCKWELL/MBB (GERMAN) RANGER 2000
- CESSNA/CITATION (USA) JET TRAINER

There are seven tremendous competitors who will make it a great competition and give us as a good airplane for primary training.



The SECDEF also directed that we establish a four track follow-on training structure. Toward that end, students coming out of JPATS primary training will go to either Navy fighter attack and E-2 or C-2 mode -- basically the carrier operation guys; our bomber/fighter track in which we train in the T-38, and later the AT-38 for our fighter-bound new pilots; the airlift/tanker/maritime track; or a helicopter track.



TASKING

SECDEF:

- EXCHANGE INSTRUCTORS BEGINNING IN FY93
- EXCHANGE STUDENTS BEGINNING IN FY94

CJCS' ROLES AND MISSIONS:

- ESTABLISH JOINT SQUADRONS AT TWO LOCATIONS BY END OF FY94
- START JOINT AIRLIFT/TANKER/MARITIME PATROL TRAINING AT REESE AFB IN FY94

Specific taskings came along with that general guidance from the SECDEF. He effectively said, "Let's get going ... let's don't mess around and study this thing for five years." And the *Roles and Missions Report* that the services agreed to gave us even further guidance. So let me talk a little bit about those specific points.



JOINT PROGRESS

PRIMARY IP EXCHANGE



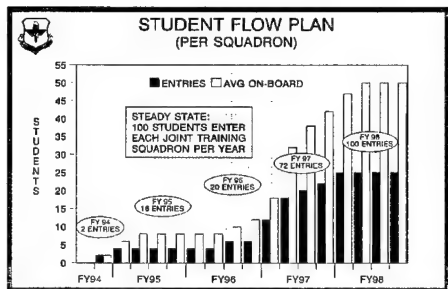
REESE AFB

SEP 93
6 USN IPs
DEC 94
4 USN IPs
3 / QUARTER TO
BUILD TO 30 USN IPs

NAS WHITING

SEP 93
5 USAF IPs
DEC 94
5 USAF IPs
3 / QUARTER TO
BUILD TO 30 USAF IPs

We're making progress. We've taken our first step with instructors. We've got some Navy instructor pilots -- IPs -- at Reese Air Force Base, Texas, and we've got some Air Force IPs at Whiting Field, Florida, flying the T-34 right now. In other words, we're not going to wait for the JPATS to come along, we're going to move into this so we can learn how to do it properly and be ready for the new airplane when it comes later in the '90s.

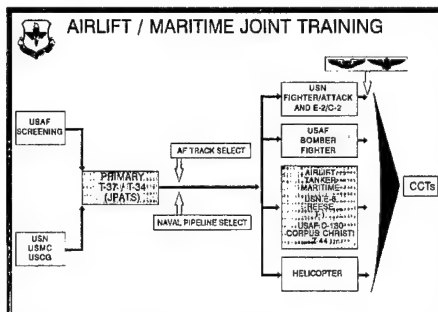


With our student exchange, we're going to start slow and learn as we go. Over the next few years, we will just be putting in about 20 to 30 people a year, but then we're going to ramp up very quickly so we will have two full squadrons that are joint -- and the rest of them beginning to be joint -- by the time our JPATS comes along in 1997-98 and into the next century. So that's our student flow. And in our planned steady state student flow, each of our primary squadrons -- whether they're at an Air Force Base or a Navy base -- will have about 200 students, half of which will be from each service.



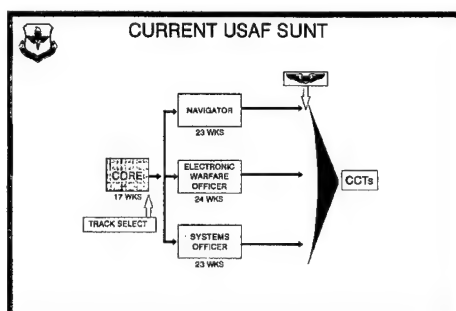
Just as we're going to do in the tech training arena, we're also going to rotate commanders. We've already selected the "number two" -- the Air Force DO and Navy XO -- in each squadron. We've got a Navy commander, very highly qualified, and a twice below-the-zone lieutenant colonel at Whiting. After 18 months learning the joint operation, they will likely rotate up to command the squadron.

Now a little bit more about maritime training. Again, after screening and coming into primary T-37 and T-34 training -- later to be the JPATS -- we will do our track selection. But as we explored more about how we each train, a new approach dawned on us.



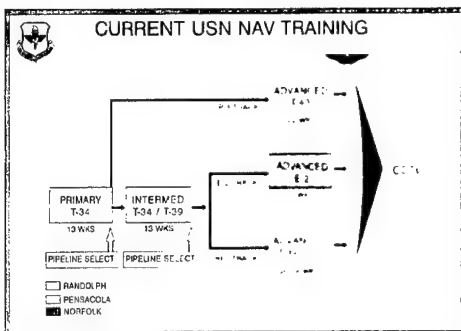
The Navy uses the T-44 -- a Beech twin turboprop -- to train their people in multi-engine aircraft. We use our new T-1 in specialized UPT -- a very successful training airplane.

With the Navy sending their multi-engine jet pilots to a turboprop, and us sending our C-130 bound pilots to a jet aircraft, we thought we would do a little "crossflow" by moving into the mode where all C-130 pilots from the Air Force, Navy, and elsewhere would fly the T-44, and all jet pilots -- like the E-6 guys going to the TACMO E-6 "Hermes" at Tinker Air Force Base -- would come to Reese and fly the T-1. So we will cross flow in the maritime and airlift arena, even into advanced training. We're starting with both instructor and student exchanges in that program this year.



Although we weren't directed to, we also looked at navigator training. Today, we do all of our Air Force navigator training at Randolph Air Force Base in Texas -- we moved it there from Mather when it closed last year. We've got our core 17-week course, our basic course for big airplane navigators, and one for our electronic warfare officers -- EWOs -- and our systems officers who fly in fighter aircraft or bombers after they get their wings and go on

to combat crew training. The Navy has a little different approach.

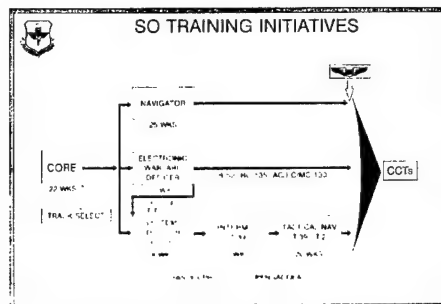


They give some T-34 basic flying instruction to their navigators. About half way through that, they select some navigators -- primarily students bound to larger aircraft -- and they come to Randolph and go through school with our navigators. The rest of them get some more T-34 time, then some T-39 time, and then go either to the E-2 at Norfolk Naval Air Station in Virginia, or to Pensacola -- where they have some specially modified T-39s with F-16 radars in them that do a very good job of teaching folks how to be fighter navigators. They also do some basic fighter maneuvers training -- air-to-air combat training -- in the T-2. That's where Navy RIOs -- radar intercept operators -- go that are headed for the F-14 and A-6.

"It only seems logical -- where it's practical and where it's smart, and particularly if we can do it where it saves us some money -- to expose our students from the different services to one another at the very onset of their careers"

This program impressed us so much -- and the Navy had the extra capacity -- that we're going to move toward a new approach where after EWO school, those folks that are headed for fighters or B-1s in our program are

going to go to Pensacola and do their advanced training with the Navy RIOs in the T-



39. We believe the Navy can do a much better job of preparing them for fighter duty than we can in our T-43.

So, wrapping it all up, whether you're talking tech school or whether you're talking flying training, we're "off and running" in the joint arena -- and it's going to pay off handsomely for us. We're moving fast in establishing our joint training programs for both the enlisted and officer corps. As we do this, we see chances for efficiencies and chances to work together and reduce our infrastructure even more than we have in the past. I think you see that reflected in the '95 submission for the Base Realignment and Closure Commission. There's little doubt that as we get quite a bit smaller, a third smaller, 40 percent smaller, half smaller, or however we end up, it's imperative that we spend whatever time's needed in training our folks as best we can to work together, to train together, to exercise together and to fight together ... and so it only seems logical -- where it's practical and where it's smart, and particularly if we can do it where it saves us some money -- to expose our students from the different services to one another at the very outset of their careers. It's an exciting time for us, and a great prospect that should take us a long way.

Let me close by saying how much I appreciate being back with the AFA. You support our Air Force, you fly top cover, and your direction really helps us as we try to struggle with the big changes that face us. It's great to be a member, and it's great to be on your team. Thank you very much.

General Henry Viccellio, Jr.

GENERAL HATCH: *I think the first questioner wants to get a leg up on the BRAC, and asked if you anticipate that you have the right number of bases with this joint UPT.*

GENERAL VICCELLIO: Well, it's really too early to tell because we're still looking at what this is going to do to us and for us. We're also looking at some other options which go beyond perhaps the consolidation of training, and looking at the collocation of training where the reduced size of our training requirement as we get smaller has given us some excess capacity. And that applies not only to the Air Force but to the Navy as well.

When I first came to ATC and then AETC, whenever asked about subsequent or additional base closures, my answer was pretty easy. Since my predecessors had stood up to closing Chantute, Lowry, Mather, Willy, I liked to say that "we paid at the office up at the beginning of this drive," and we're properly sized for the Air Force of the future. But as the Air Force of the future kept getting smaller and smaller and smaller with each of these subsequent BRAC cuts, we might find ourselves a player in BRAC '95. So the answer is a strong "maybe" ... how's that?

GENERAL HATCH: *Thank you General Viccellio. The next question asks if you've considered contracting out any of technical training to industry?*

GENERAL VICCELLIO: Not much, and people ask me that not just for technical school but for things like primary flight instruction because we've been through that cycle at least once in our Air Force history. And right now while there's no doubt that you can achieve some efficiencies by doing that in some areas where it's practical and the training is available, it's really important to start

our people off on their Air Force career not only with the right skills, but also with the right attitude about their service, the institution, what's expected of them in terms of standards of conduct -- both personal and professional -- and the right kind of character. Having the right kind of instructor who wears a uniform day in and day out at the very beginning of their career as they're learning their initial skills seems very important to us. So we're going to have to be hit much harder than we have thus far in the budget arena before we're willing to give that up.

GENERAL HATCH: *Thank you Butch. What are AETC plans concerning continuing education and professional development for both commissioned officers and for the enlisted corps?*

GENERAL VICCELLIO: We have two big initiatives in that arena, both of which I think will serve us very well once they're fully implemented. First of all, let me talk about what we call 7-level training -- continuation training for our people in the enlisted ranks. The Year of Training showed us that over the years our philosophy of how we develop our people was basically to give them some good "up front" tech school, but then pass them on out there to the Air Force and its OJT environment to see them through 10, 20, or maybe even 30 years of a career through job skills progression. That approach also took them through rank progression, and past that point that comes in all of our careers where we need to start thinking about being a trainer or a supervisor and assuming responsibility for others' performance instead of just our own. As we studied this process during the Year of Training, it seemed to us that perhaps picking the right point out there to bring our people back to a formal training environment would

help them make these transitions a little better than just whatever is out there in OJT world. For each of our 283 specialties, we are in the process of developing a course -- what we call a "7-level course" -- to which a prospective craftsman who has been in the service between six and nine years, will come back for two, three, or maybe in the most technically demanding arenas four weeks, in which we will focus on two things. First we will focus on what's new in carpentry, what's new in dental hygiene, or what's new in jet engine repair. We will look at the technologies that are coming their way, the equipment they can expect to see in the field in the near future, how we apply automation in their career field, how they might use automation to do their job better.

Second, our training will look at what we call "hands-on" leadership -- not the professional military education, the "philosophical bent" on management, but how you counsel, how you schedule people, how you help them be part of a *team* -- because these people will soon be team leaders. This 7-level "refresher course" program's going to serve us very well.

In addition to our 7-level training, perhaps the most important initiative we have is to put some rigor into our training programs and our educational programs so that they apply to our people at the right time. In the past, we've had a very flexible approach to those programs. In other words, you could get them if you wanted them; you didn't have to get them if you didn't want them; you could take them by correspondence; you could get them before you needed them; or you could need them before you had to have them. To remedy this hodge-podge, we have built a much more structured career path for enlisted and officers alike that has some new elements to it. It's sequenced, it's mandatory before you're eligible to move on to the next grade or the next training skill level, and it will be in residence for our active forces. Recognizing limitations on the availability of our reservists and guardsmen, we will still have correspondence opportunities. But we want more rigor -- and I don't say rigor in that it's going to be tougher ... but it's going to have a lot more structure to it. That will produce a better

product.

GENERAL HATCH: *Thank you General Viccellio. Question: How will you apply the concept of "best value" criteria to the JPATS competitive selection?*

GENERAL VICCELLIO: Well, in my view, the "best value" airplane is the airplane that, when you consider both cost and mission performance -- and that's something on which we're going to focus -- does the job best. I showed you pictures of seven competitors' airplanes. I haven't flown them all, but I hope to before the official competition starts later this summer. As I think about them, I'm sure that any one of them can do the job for us. It will be interesting and it will be fun picking the one that can do it the best. We're going to see some different prices, and some different capabilities. We're going to see a wide range of approaches, since we've got turbojets as well as turboprops in the competition. The final RFP, which industry has had three chances to look at now, should be out in the very near future. We've got an ORD that describes the mission profiles we're going to evaluate throughout the flight eval. We're going to focus not only on individual specific tasks, we're also going to focus on overall mission performance from takeoff to landing ... and I think that's going to give us a good ability to judge these airplanes and their capability to effectively and efficiently do the job for us.

GENERAL HATCH: *Thank you General Viccellio. The final question, do you have any plans to consolidate the Army, Navy and other services into the Community College of the Air Force?*

GENERAL VICCELLIO: If I had the authority I would do it tomorrow. The CCAF has served us incredibly well in instilling in our people a knowledge of the opportunities and a determination to take advantage of educational opportunities. When you look at our CCAF graduates and how they do retention-wise, promotion-wise, and performance-wise in the Air Force, the difference is dramatic compared to the rest of our enlisted population as a whole. Why the other services haven't picked up on this opportunity is beyond me, particularly since we've done most of the leg work in getting accredited and

getting such federal entities as the Federal Aviation Administration to give us real recognition of this associate degree, and credit toward bachelor's degrees.

So, the last time we had an ITRO meeting I stood up and said, "Guys, I have a problem. One of the requirements for our accreditation of this associate degree is that at least 75 percent of our instructors in our tech schools, our basic school and our PME structure have to be degreed. They have to have a degree from the CCAF or we're going to lose our accreditation -- and we're coming up for re-accreditation next year, which happens every 10 years. As we go 'jointer and jointer and

jointer,' and we send more and more of our students to stand in front of an Army or a Marine Corps or a Navy instructor who obviously isn't a graduate of CCAF, we lose the opportunity to get that person something that counts toward that associate degree. Either let us degree your instructors at these courses, or let's all get together and make CCAF stand for the Community College of the Armed Forces." I predict success.

GENERAL HATCH: *Thank you very much General Viccellio. We appreciate you being here and we appreciate all your fine remarks.*

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